

## DIC REPORT 2017 The DIC Group Integrated Report

# Color & Comfort



Complete Version

**DIC** Corporation

## The DIC WAY

## Mission

Through constant innovation, the DIC Group strives to create enhanced value and to contribute to sustainable development for its customers and society.

## Vision

Color & Comfort by Chemistry

## Spirit

Drive, Integrity, Dedication, Collaboration, Harmony

### Making it Colorful DIC helps make life colorful





Mission

Vision

Spirit

## **Specialty Solutions**

DIC draws on its expertise and comprehensive strengths to offer solutions

## **Innovation through Compounding**

DIC brings innovation to society through its core compounding technologies

# Color & Comfort

### Connecting the DIC Group and its Stakeholders

#### **DIC Group Communications Tools**

The DIC Group uses a variety of tools to promote communication with its many stakeholders to encourage greater awareness of the Group's activities. More detailed sustainability-related information and data can be found on the DIC website.



#### **DIC Global Website**

#### Real-time information

Wesh http://www.dic-global.com/en/ Umbrella website providing information to the global public about the DIC Group and reports on its various activities; updated as necessary



#### **About this Report**

In previous years, the DIC Group has published a combined corporate profile and sustainability report with the aim of presenting a clear, easy-to-understand picture of the Group and its sustainability initiatives. Beginning in 2017, the Group has transformed the DIC Report into an integrated report, which combines financial information, encompassing consolidated operating results and corporate strategies, and nonfinancial (sustainability) information. The Group has published a simplified summary version of the report (printed), which focuses on key highlights, and a more detailed complete version (PDF), which contains extensive quantitative data.

#### DIC Report (Complete version) (PDF-form publication)

WEB http://www.dic-global.com/en/csr/annual/ Note: The designation "Asia-Pacific region" as used in this report refers to Asia (excluding Japan and Greater China) and Oceania.

#### Link with the DIC Website

The (WES) mark indicates that more detailed information and/or data can be found on the indicated page of the DIC global website. DIC global website WES http://www.dic-global.com/en/

#### Scope of Reporting

In principle, this report provides information on DIC Corporation and consolidated DIC Group companies worldwide. For information on the scope of reporting for ESH-related initiatives, please visit the pertinent page of the DIC website.

#### **Reporting Period**

Fiscal year 2016 (January 1-December 31, 2016)

#### Date of Publication

June 2017 (The next report is scheduled for publication in June 2018.)

#### **Guidelines Referenced**

Guidelines referenced in the preparation of this report were ISO 26000, the International Organization for Standardization's standard for social responsibility, released in 2010; Japan's Responsible Care Code; and the Global Reporting Initiative (GRI)'s G4 Sustainability Reporting Guidelines.

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#### **Cover Design**

The cover of this year's DIC Report derives its inspiration from the DIC Group's "Color & Comfort" brand slogan, employing bright colors that evoke the efforts of the Group, a global powerhouse, to enrich and add vibrancy to society and the lives of people everywhere.

## The DIC Group: A Global Powerhouse

**DIC** Corporation

DIC Building, 7-20,

February 15, 1908

(Nonconsolidated: 3,313)

March 15, 1937

¥96.6 billion

Japan

20,481

Nihonbashi 3-chome, Chuo-ku, Tokyo 103-8233,

#### **Corporate Data**

Registered name: Corporate headquarters:

Date of foundation: Date of incorporation: Paid-in capital: Number of employees:

Number of subsidiaries and affiliates:







Corporate headquarters (Tokyo)

Notes: 1. The consolidated results for fiscal year 2013 comprise the accounts for the nine months ended December 31, 2013, of DIC and all but one of its domestic subsidiaries and the 12 months ended December 31, 2013, of its overseas subsidiaries and one domestic subsidiary.

 domestic subsidiary.
Corporate data is as of December 31, 2016. Net sales and operating income are for fiscal year 2016. Net Sales (Billions of yen) (B





#### **Global Network**

DIC has 174 companies in 63 countries and territories around the world.



Sun Chemical's headquarters (United States)



#### DIC Report 2017

#### 3



Breakdown of Fiscal Year 2016 Net Sales by Region

Note: Operating income as used here includes eliminations (approximately ¥5.1 billion). Accordingly, these percentages do not represent shares of reported operating income. Breakdown of Fiscal Year 2016 Operating Income by Region



#### **Principal Global R&D Sites**



## A Message from the President

Representative Director, President and CEO DIC Corporation Yoshiyuki Nakanishi



Targeting growth over the long term by providing products that accurately address social imperatives

## > Building Robust Corporate Health and Growth Drivers

The DIC Group is a leading multinational chemicals organization comprising 174 companies in 63 countries and territories. Printing inks account for approximately 30% of consolidated sales, while organic pigments, the principal raw material used in printing inks, account for around 20%. We are the world's leading manufacturer of polyphenylene sulfide (PPS) compounds—key engineering plastics—with a global market share of approximately 27%. We also supply a wide range of distinctive fine chemicals products, including polymers and liquid crystals (LCs) that contribute to the development of society and our customers. Having formulated a growth scenario that includes concrete long-term targets for consolidated net sales and operating income of ¥1,000 billion and ¥100 billion, respectively, in fiscal year 2025, we are currently implementing a variety of measures aimed at powering further growth.

In printing inks and synthetic resins, both businesses with stable earnings bases, we are shifting to a way of conducting business that will facilitate sustainable growth. To this end, we are taking steps to optimize production configurations and reduce costs in mature markets, notably North America, Europe and Japan, on the assumption that appropriate demand will decline. At the same time, we are emphasizing a shift to sustainable products such as waterborne and ultraviolet (UV)curable resins and accelerating the expansion of our operations in promising markets, particularly in Asia, with the goal of reinforcing our already substantial global market presence.

We are concentrating our allocation of management resources on a global basis in businesses that we expect to drive growth, notably thin-film transistor (TFT) LCs, functional pigments, PPS compounds and packaging materials. With demand for packaging materials rising, we built production facilities for liquid inks for food and beverage packaging in Indonesia and Turkey. We also built a PPS compounds production facility in the People's Republic of China (PRC), the automobile industry's principal production base. All three of these facilities commenced operations in fiscal year 2016. In the inkjet inks business, we are promoting the development of new products that will facilitate our entry into promising new areas.

In addition, we are expediting efforts to create next-generation businesses that respond to evolving requirements in areas such as electronics materials, packaging and healthcare. In light of increasing social imperatives pertaining to environmental issues, artificial intelligence (AI) and the Internet of Things (IoT), among others, we are leveraging our proprietary technologies and ingenuity to provide high-value-added products to customers around the world.

Through these and other efforts, we are working to ascertain the needs of individual businesses to build a balanced, diversified business portfolio, thereby ensuring a robust earnings structure. By remaining abreast of social imperatives and realizing distinctive growth drivers that stimulate demand, we are confident that this will enable us to achieve our targets for fiscal year 2025.

#### **Record-High Operating Income and Ordinary Income in Year One of DIC108**

In fiscal year 2016, the first year of our current medium-term management plan, DIC108, we reported consolidated net sales of ¥751.4 billion. Operating income amounted to ¥54.2 billion, while ordinary income reached ¥55.8 billion, both record highs. Net income attributable to owners of the parent was ¥34.8 billion. Return on equity (ROE) was 12.9%. Dividends\*1 were ¥100.00 per share, an increase of ¥20.00, while the payout ratio was 27.3%.

\*1 Adjusted to reflect the impact of a consolidation of shares implemented on July 1, 2016. \*2 Debt-to-capital ratio (D/C) ratio: Interest-bearing debt / (Interest-bearing debt + Net assets) \*3 Solder resist is an insulating materials used to protect circuit patterns on PWBs.

#### **Expanding Efforts and** Picking Up the Pace

Fiscal year 2017, the second year of DIC108, is an important year for us strategically. When we kicked off DIC108, we described it as an extension of its predecessor, DIC105, under which we made progress toward improving our financial health—evidenced by a debt-to-capital ratio\*2 of 47%, exceeding our target of 50%-and declared our intention to shift gears, that is, to adopt an active stance toward driving growth. To this end, we budgeted ¥150.0 billion over three years to strategic investments, including in mergers and acquisitions (M&As).

In January 2017, we announced that we had entered into a capital and business alliance with Taiyo Holdings Co., Ltd., which is engaged in the manufacture and sale of specialty inks, investing ¥24.9 billion. Taiyo Holdings is one of the world's leading manufacturers of solder resist\*3 for printed wiring boards (PWBs). We supply the company with materials used in these products, including polymers and pigments. In addition to expanding sales of existing products, we look forward to capitalizing on synergies yielded by the alliance to promote the efficient development of next-generation products, including materials for PWBs. Looking ahead, we will continue to actively pursue M&As that will further propel growth and will move appropriately and swiftly on a number of potential deals currently being explored.

In the area of R&D, we are breaking free of focus on exclusively independent efforts, making use of venture capital and other external resources through open innovation to accelerate the creation of new businesses. In January 2017, we commenced construction of a new technical building at the Central Research Laboratories in Japan with the goal of ensuring the effectiveness of efforts to grow technologies in such cutting-edge fields as printed electronics.

#### The "Color & Comfort" **Brand Slogan**

Healthcare is a crucial area in which we are working to create next-generation businesses under DIC108 by capitalizing on our foresight and tireless R&D efforts. Since commercializing viable technologies for mass managed cultivation of the edible algae Spirulina in 1977, we have launched a variety of Spirulinaderived health food products and supplements. In recent years, we launched *Linablue*<sup>®</sup>, a natural blue food coloring. In 2013, Linablue® became the first natural blue food coloring to be approved by the U.S. Food and Drug Administration (FDA). Underscored by a rapid shift in consumer preference from

Our operating income target for year one of DIC108 was ¥54.0 billion, a record high. Quantitative Targets | Our because for year three is ¥65.0 billion.

	(Billions of yen/%					
	2015 Actual	2016 Target	2016 Actual	2017 Target	2017 Forecast*²	2018 Target
Net sales	¥820.0	¥870.0	¥751.4	¥920.0	¥790.0	¥960.0
Operating income	51.1	54.0	54.2	58.0	58.0	65.0
Net income <sup>*1</sup>	37.4	25.0	34.8	30.0	37.5	40.0
ROE	15.0%	9.0%	12.9%	10.0%	13.1%	12.0%
Ordinary investments	34.0			¥120.0		
Strategic investments (M&As, etc.)	_				¥150.0	
D/C ratio	47%			Around 50%		
Dividend payout ratio	21%				Around 30%	

\*1 Net income attributable to owners of the parent \*2 "2017 Forecast" figures are official forecasts published in May 2017.



artificial to natural food colorings, particularly in North America and Europe, *Linablue*<sup>®</sup> continues to attract attention from the perspectives of food safety and security.

*Linablue*<sup>®</sup> and our printing inks and pigments businesses underscore our affinity for businesses involving "color." We have introduced a new brand slogan, "Color & Comfort," with the aim of boosting recognition of the DIC name and bolstering corporate value and, since fiscal year 2016, have implemented an ambitious branding program. In October 2016, we introduced a new television advertisement in Japan that communicates the message of the DIC brand. We are currently implementing a variety of important branding initiatives in the 63 countries and territories in which the DIC Group has operations to bolster awareness of the value that we provide to stakeholders and in doing so to help instill a greater sense of solidarity across the Group.

#### Pursuing Sustainable Management and Realizing Record-Breaking Operating Results

Recognizing that incorporating environmental, social and governance (ESG)-related considerations is essential to our ability to provide products and services that support communities and industries, we have established key performance indicators (KPIs) for critical initiatives. Looking ahead, we will continue working to support our business foundation and ensure sustainable growth by promoting efforts to, among others, help reduce the use of substances that harm the environment and ensure the effective management of chemical substances. We will also continue to develop and launch products with a lower environmental impact that contribute to the resolution of key social imperatives, including water-based inks, waterborne resins, LC materials that use less electric power and PPS compounds for use as an alternative to metal materials in automobiles.

As a chemicals company, we understand that safety is our highest priority. Accordingly, we continue to focus efforts on the creation of frameworks to mitigate the impact of disasters and prevent the occurrence of occupational accidents and provide safety training. To reinforce safety in the workplace, we offer hands-on safety training, which seeks to foster awareness of latent risks, as a component of training for new employees, both in Japan and overseas.

We also understand that creating work environments that empower diverse employees to exercise their individuality and reach their full potential is essential to growth for employees and for the DIC Group as a whole. As part of our efforts to promote diversity across the Group, we employ a broad spectrum of individuals without regard to considerations such as gender, nationality, physical limitation or age. We also endeavor to foster a corporate culture that draws on our understanding and respect for diversity to produce creative ideas, as well as to incorporate the concept of diversity into management, thus creating workplaces that enhance job satisfaction.

DIC108 also positions the provision of returns to shareholders as an important priority. We will continue working to maintain a balance among financial health, investment in growth and shareholder returns and have set a target for dividend payout ratio of 30% over the three years of the plan. To this end, we will shift our emphasis to income performance–linked dividends based on a fundamental commitment to maintaining stable returns.

Looking ahead, we will continue to diligently implement the strategies outlined in DIC108 to expand and rationalize businesses that we expect to drive growth and promote rationalization, as we work to achieve our best performance yet in terms of operating income, ordinary income and net income attributable to owners of the parent. In these and all our efforts, we look forward to the ongoing support and guidance of our many stakeholders.





## Steady Progress in Strategic Investments

In fiscal year 2016, DIC kicked off a new medium-term management plan, DIC108. Having made a certain degree of progress in recent years toward improving its financial health, a key management challenge, the Company once again adopted an active stance toward driving growth under the plan, budgeting ¥150.0 billion for strategic investments, including in M&As, between fiscal year 2016 and fiscal year 2018. Accordingly, the Company has been on the lookout for investment opportunities that align with its fundamental DIC108 goals, which are to stabilize the earnings of its core businesses, expand businesses that will drive growth and create next-generation businesses.

## 1 DIC enters capital and business alliance with Taiyo Holdings, transforming the latter into an equity-method subsidiary

On January 25, 2017, DIC announced a capital and business alliance with Tokyo-based Taiyo Holdings Co., Ltd., as a result of which Taiyo Holdings became an equity-method subsidiary. Total investment by DIC amounted to  $\pm$ 24.9 billion.

Taiyo Holdings is involved in the manufacture and sale of chemical products for use in PWBs and other electronics components and in semiconductors. Of note, the company commands a top-class share of the global market for solder resist, which is critical to the production of PWBs.

DIC sees the electronics market as particularly encouraging, primarily because it offers potential for stable growth into the future and a considerable scope for leveraging DIC's proprietary technologies. In addition to providing synthetic resins, pigments and LCs, among others, to electronics manufacturers, DIC is actively promoting the development of materials for printed electronics, thermal materials and other high-value-added offerings that capitalize on its core technologies.



MID (artist's rendering): MIDs do not require substrates or harnesses, and can thus be made smaller, lighter and thinner than conventional PWBs. The market for these components is expected to expand in the future.

In addition to bolstering sales, the agreement brings together DIC's materials development capabilities, which draw on core technologies cultivated over many years, and Taiyo Holdings' firm understanding of market needs—underpinned by its extensive supply chain encompassing everything from solder resist to PWBs—and marketing prowess to promote the swift and efficient development of products for new PWBs, including molded interconnect devices (MIDs), and other next-generation materials. The two companies will continue working to maximize synergies with the aim of driving global business growth and expanding profits.

#### 2 Sun Chemical and Alliance Holding Company form joint venture that is the largest printing inks manufacturer on the Arabian Peninsula

On March 17, 2017, Sun Chemical Corporation concluded an agreement with Alliance Holding Company Ltd to form a joint venture combining Sun Chemical's operations on the Arabian Peninsula with the operations of Alliance subsidiary Ink Products Company, Ltd., a leader in the region's printing inks market based in Riyadh, Saudi Arabia. Sun Chemical's stake in the new company is 51%.

Recent years have seen a tapering of demand for publishing inks, owing to the move toward digital media. Accordingly, the focus of the global printing inks market has shifted to packaging inks, which are expected to continue seeing growth in advanced economies. Packaging inks account for more than 70% of printing inks sold on the Arabian Peninsula, where the annual market for such inks is projected to continue growing at between 5% and 10% for the foreseeable future. Sun Chemical thus recognizes the region as important from a strategic perspective.



Sun Chemical's headquarters in the United States

The establishment of a joint venture brings together Ink Products' marketing capabilities, which reflect its familiarity with the market, and Sun Chemical's products and technologies. Sun Chemical and Ink Products will move with speed to maximize resulting synergies to provide top-quality products and superior services, with the aim of driving further growth. Sun Chemical and Ink Products boast a combined regional market share of roughly 30%. By leveraging the two companies' strengths, the new joint venture will strive to lift this above 40% by fiscal year 2021.

#### Net sales Operating income --- Operating margin (%) Net sales (Billions of ven) 900 Operating income (Billions of yen) 830.1 820.0 80 800 751.4 703.8 705.6 7.2% 70 700 6.29 5.7% 60 5.5% 600 4.9% 50 500 40 400 30 300 200 20 40.2 41.1 511 54.2 38.5 100 10 0 0 2012 2013 2014 2015 2016 (FY)

#### Net Sales, Operating Income and Operating Margin

#### Net Income Attributable to Owners of the Parent and ROE



Net Assets, Interest-Bearing Debt and Debt-to-Capital Ratio\*





#### Cash Provided by Operating Activities and Free Cash Flow





#### Returns to Shareholders\* (Dividends per Share and Payout Ratio)



DIC Report 2017

## Global CO<sub>2</sub> Emissions and CO<sub>2</sub> Emissions per Unit of Production (DIC Group)



Environment-Friendly Products as a Percentage of Overall Product Portfolio (DIC Corporation and DIC Graphics Corporation)



#### Average Years of Employment (DIC Corporation)



## Global Energy Consumption and Energy Consumption per Unit of Production (DIC Group)



#### Occupational Accident Frequency Rate (DIC Corporation)



A frequency rate of 1.0 means one occupational accident resulting in workdays lost in one year at a site with 500 employees.



#### Female Employees in Management Positions (DIC Corporation)

## **Overview of Materiality Analysis**

The DIC Group has abstracted and analyzed material issues, that is, issues with the potential to affect its performance, and has identified those of particular significance, and is taking steps to effectively and efficiently address these issues. Guided by its DIC108 medium-term management plan, and by its long-term growth scenario, the Group will continue working to ensure that these efforts are beneficial to the management of its businesses.

#### 1. Materiality Analysis Process

#### 1 Abstraction of Issues

DIC abstracted 91 issues of particular significance to the Group based on the Global Reporting Initiative (GRI)'s G4 Sustainability Reporting Guidelines; its own 11 sustainability themes; and issues delineated in DIC108 or The DIC WAY or added by Sustainability Committee members. The Group has divided these issues into three groupings: Environmental (E), social (S) and governance (including economic issues) (G), which it has combined into 22 general materiality issues.

#### 2 Materiality Analysis

Sustainability Committee members, heads of business units that spearhead the implementation of initiatives related to sustainability themes, and senior management from DIC Group business units in the United States, Asia and elsewhere assessed abstracted issues from the twin perspectives of importance to DIC Group businesses and importance to stakeholders. Based on the results of this process, and having comprehensively reviewed issues identified by external assessment organizations, the Company determined materiality to the DIC Group.

#### (a) Material importance to DIC Group businesses

DIC assessed issues with the potential to have an impact on the DIC Group, giving consideration to both potential risks and business opportunities.

#### (b) Material importance to stakeholders

- (i) The DIC Group recognizes five key stakeholder groups (customers, suppliers, local communities and society, employees and investors). Assessments looked at level of interest on the part of stakeholders and potential impact.
- (ii) To reinforce the role of objective external criteria, materiality issues identified by the DIC Group were analyzed by key independent ESG investment assessment programs/organizations, namely, the Dow Jones Sustainability Indices (DJSI), FTSE, MCSI, the Sustainability Accounting Standards Board (SASB) of the United States and Sustainalytics.

### 2. The DIC Group's Materiality Matrix

DIC has organized the issues abstracted and assessed through the process outlined above into its own 22 general materiality issues. The materiality of each of these issues was scored and a materiality matrix created by plotting the scores using two scales representing importance to DIC Group businesses and importance to stakeholders. Information on the progress of the Group's materiality-related initiatives in fiscal year 2016 can be found at the end of each section of the Sustainability Report component of both the complete and summary (printed) version of DIC Report 2017.



DIC Report 2017

## Ensuring Sustainable Growth The DIC Group's Business Portfolio

The DIC Group has capitalized on its capabilities in organic pigments and synthetic resins, the principal material for printing inks, to build a broad portfolio of materials and finished products. Today, the Group classifies its operations in five business segments—Printing Inks, Fine Chemicals, Polymers, Compounds and Application Materials—through which it provides products and solutions that respond to the needs of society and its customers and add color and comfort to life.



## **Printing Inks**

## A Stable Business Since the Start



President, Printing Inks Segment Hideo Ishii





#### **Printing Inks Product Division**

Offset inks; gravure inks; flexo inks; can coatings; news inks; packaging adhesives; printing supplies



#### Outstanding color

reproduction and reduced energy consumption DAICURE HR series

(High-sensitivity UV-curable offset inks) As well as suitability for use with low-power UV printers, DIC's innovative DAICURE HR high-sensitivity UV-curable offset inks deliver outstanding color reproduction.



Ensuring safety for food and the environment FINART series (Gravure inks for food packaging)

FINART gravure inks combine superb image quality and suitability for high-speed printing. They also respond to demand for the reduction of solvents in food packaging and for compliance with safety regulations in different markets, thereby contributing to food safety and the environment.

For more information, please see Segment Results on page 136.

## Segment Operating Results



## Rationalize operations in mature markets and shift focus to packaging inks

Recent years have seen a tapering of demand for publishing inks, news inks and other inks for paper-based print media, particularly in mature markets such as Japan, North America and Europe, owing to the burgeoning popularity of digital media. Since its previous medium-term management plan, which ran from fiscal year 2013 through fiscal year 2015, the DIC Group has sought to strengthen the printing inks business by advancing three core strategies, which are to further rationalize operations in mature markets, to augment operations in promising emerging economies and to shift its business' focus to packaging inks, for which demand is rising worldwide. Under DIC108, the Group is taking decisive steps to reinforce its presence in emerging economies, keeping a close eye on demand trends. At the same time, the Group is working to optimize its regional production configurations and elevate sales of segment products, particularly environment-friendly inks, functional coatings and adhesives.

## *Expand operations by focusing on promising markets and products*

The DIC Group is reinforcing its production capabilities, placing an emphasis on the Middle East, South America and key Asian markets such as the Philippines and Vietnam. In both emerging and developed economies, the Group is focusing its allocation of resources on environment-friendly products for food packaging applications, including packaging inks, functional coatings and adhesives. Through these efforts, together with those in related businesses such as films, the Group will continue striving to provide total packaging materials solutions that respond to the needs of both consumers and brand owners.

## Progress of Major Initiatives in Fiscal Year 2016

DIC continued to invest in the integration and rationalization of its production facilities in mature markets, including Japan, North America, Europe and Oceania, and to accelerate the shift of its focus toward packaging inks. Efforts to augment operations in promising emerging economies included the start up of a new mother plant in Turkey and the completion of a new production facility in Indonesia. Efforts to reinforce packaging inks operations emphasized product development. During the period, the Company developed, launched and took active steps to elevate sales of, among others, a waterbased flexo ink that delivers a print quality comparable to that of gravure inks and accommodates increasingly stringent regulations governing volatile organic chemical (VOC) emissions in Asia, notably in the PRC and India, as well as a new solvent-free low-temperature curing adhesive and a water-based functional coating, among others. In the areas of solvent-based inks and adhesives, the Group also promoted sales of new high-solid products with a reduced environmental impact. The period also saw the adoption by manufacturers in Japan and overseas of a new gas-barrier adhesive that improves the ability of laminated packaging, thereby helping extend the shelf life of food products, earning high marks from both customers and brand owners.



Materials printed with water-based printing inks

#### New Production Facilities Completed in Promising Markets

HIGHLIGHT

In light of a tapering of demand for publishing inks, news inks and other inks for paper-based print media, owing to the rising popularity of digital media, the DIC Group is stepping up efforts to shift its focus to inks used on packaging for food products, demand for which is expected to expand substantially, particularly in emerging economies. To this end, the Group is pressing ahead with efforts to establish production facilities in key markets. A new state-of-the-art mother plant in Turkey began operations in June 2016, while a new facility in Indonesia that bolsters production capacity in that country commenced operations in July 2016.





Left: Mother plant in Izmir, Turkey Right: Production facility in Surabaya, Indonesia

## **Fine Chemicals**

## Optronics Materials and Other High-Value-Added Products



President, Fine Chemicals Segment Hitoshi Wakabayashi



Key Products



Organic pigments; special effect pigments; metal carboxylates; sulphur chemicals (lubricant additives)

> A marked increase in brightness and reduced LCD energy consumption G58 series

(Green pigments for color filters) In developing the *G58* series of green pigments, DIC defied conventional wisdom by using zinc, rather than copper, as the central metal, which achieves a marked increase in brightness and reduces energy consumed by the liquid crystal display (LCD).

## Liquid Crystal Materials Product Division

TFT LCs; Supertwisted nematic (STN) LCs



Responding to the evolution of LCDs

The production of TFT LCs demands advanced technological expertise. DIC is one of only a few companies in the world with such expertise. DIC's technologies ensure it is able to provide products that respond to demands for faster response times and greater long-term reliability.

For more information, please see Segment Results on page 136.

## Segment Operating Results



The DIC Group is powering growth in this segment by increasing value added. To this end, the Group is capitalizing on its continuous product development and solid supply configuration to bolster its share of the markets for the segment's two key strategic products: functional pigments and TFT LCs.

#### **Pigments**

With the market for organic pigments for publishing inks—the principal source of demand for these products—shrinking, the DIC Group is working to increase sales of functional pigments for niche and high-growth applications, including pigments for color filters, pigments for cosmetics and special effect pigments. In the area of pigments for color filters, the Group will broaden its lineup of products that help improve color and functions. The Group is also striving to augment its recently acquired special effect pigments business in Europe by bolstering sales of high-value-added products and reinforcing its production capacity for pigments used in building materials. To expand its pigments for cosmetics business, the Group has broadened its focus to include pigments for skincare products and is taking steps to increase its production and sales of red pigments, demand for which continues to rise, as well as to boost sales in Japan.

#### LC materials

With an emphasis on n-type TFT LCs, the principal type of LCs used in largescale displays in LCD televisions and other devices and is actively bringing new products to market, the DIC Group is actively allocating resources to the development of new products. The Group is also maximizing its technical and production base in Qingdao to augment its operations in the PRC, which is expected to be a major center of LCD manufacturing going forward.



TFT LCs used in LCD televisions

## Progress of Major Initiatives in Fiscal Year 2016

#### **Pigments**

Shipments of functional pigments rose steadily, underpinned by generally firm demand. Of particular note, sales of pigments for cosmetics increased substantially, reflecting firm sales of products using processing technologies obtained through the acquisition of a manufacturer in fiscal year 2015 and the fact that red—a traditional DIC Group strength—was in fashion for cosmetics during the period. In the area of special effect pigments, the Group pressed ahead with efforts to expand the capacity of its pigment production facilities in Poland and Russia in response to growing demand.

#### LC materials

Ongoing development efforts in the area of LCs that reduce the energy consumption of large LCDs yielded new products that helped enhance sales. In the second half of fiscal year 2016, a new product that boosts LCD response speed was adopted for use by an LCD manufacturer in

the PRC as the Group stepped up R&D and sales initiatives with the goal of strengthening sales in fiscal year 2017.



Sales of pigments for cosmetics continue to rise, led by red pigments

### DIC Group Bolsters Production Capacity for Aluminum Powders and Pastes for AAC

HIGHLIGHT

The excellent fire resistance, thermal and acoustic insulating properties, and workability of autoclaved aerated concrete (AAC) make it suitable for a broad range of construction applications, including houses, high-rise buildings, electric power plants, retaining walls for transportation infrastructure, roofing and floor panels. Global demand for AAC, which is recyclable and emits no VOCs, continues to increase by between 7% and 8%, a trend that is expected to persist for the foreseeable future. The DIC Group manufactures aluminum powders and pastes used as foaming agents. With demand for both products expanding, the Group is bolstering the capacity of its two production facilities, which are located in Poland and Russia.



Production facility for aluminum powders and pastes in Poland currently undergoing expansion

## **Polymers**

## **DIC's Second Core Business**



President, Polymers Segment Toshio Hasumi

Capitalizing on DIC's worldclass technologies and know-how, this segment provides synthetic resins and resin-related products to a wide array of industries.



#### **Polymers Product Division**

Waterborne resins; UV-curable resins; acrylic resins; methacrylate resins; epoxy resins; phenolic resins; fluorochemicals; polyurethane resins; polyester resins; plasticizers; unsaturated polyester resins; polystyrene; alkylphenols



Environment-friendly nextgeneration adhesives that respond to diverse needs

TYFORCE series (Moisture-curing hot melt adhesives) This series of solvent-free adhesives delivers

superb production efficiency and bonding strength. These resins have been adopted for a wide range of applications, including building materials, apparel and electronic components



Technologies that facilitate the control of light for applications ranging from display cases to optical fibers DEFENSA OP series

(Low-refractive index UV-curable resins) Used for optical fiber cladding and optical coatings, the *DEFENSA OP* series of low-refractive index UV-curable resins helps improve the performance of optical fibers and the brightness of display cases

## Segment Operating Results



For more information, please see Segment Results on page 136.

#### Product strategy

The DIC Group is concentrating management resources on strategic products, namely, waterborne, UV-curable, acrylic, polyurethane and polyester resins, and accelerating global development with a focus on promising markets, notably those for coatings and adhesives in Asia.

#### Regional strategy

Capitalizing on technical centers established in Thailand and the PRC, the Group is responding to increasingly stringent environmental regulations by offering waterborne, solventfree and other environment-friendly products, as well as by advancing the development and sale of offerings that respond to needs for general-purpose products and boosting overseas sales as a percentage of overall segment sales. With demand on the decline in Japan, the Group is integrating and closing production lines while at the same time pursuing markets for polyurethane and UV-curable resins for niche and high-performance applications, thereby lifting the weighting of high-value-added products in its portfolio.

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Demand for environment-friendly products for use in coatings is increasing overseas

### Progress of Major Initiatives in Fiscal Year 2016

#### Development of high-performance products

In the area of products for electronics applications, a key strength, the DIC Group advanced the development of a variety of new products. These include fluorosurfactants for use as resists and other types of leveling agents, a specialty curing agent for epoxy resins that can be used in servers employed in sophisticated telecommunications infrastructures, a nanoimprint lithography (NIL)-compatible resist resin and a phenolic resin binder for sand casting 3D printers.

#### Regional trends

In Japan, the Group pressed forward with the consolidation of production lines for commoditized products and the introduction of equipment for the production of high-value-added offerings. Elsewhere in Asia, efforts centered on bolstering sales of environment-friendly products, as well as on implementing marketing initiatives with a view to an assertive entry into the promising Indian market.



Sample of a 3D printer-generated sand-cast mold made with DIC's phenolic resin binder



DIC Zhangjiagang Chemicals Co., Ltd.

## Compounds

New Value Created through Dispersion and Compounding Technologies



President, Compounds Segment Masanobu Mizukoshi

This segment leverages resin and pigment dispersion and compounding technologies accumulated since DIC's founding to provide products that respond to needs in the expanding global digital printing, automotive and electronics markets.



#### Liquid Compounds Product Division

Inkjet inks; fiber and textile colorants and artificial leather colorants; high-performance coatings and adhesive materials; coatings for optical films



Advanced DIC Group pigment dispersion technologies ensure excellent color development and a glossy finish. With a reputation for reliability. *SunJet* inkjet inks enjoy popularity in markets around the world.

#### Solid Compounds Product Division

PPS compounds; high-performance compounds; plastic colorants; high-performance optical materials



Contributing to the realization of lighter, more fuel-efficient vehicles

DIC.PPS series (PPS compounds) The DIC Group's PPS compounds boast excellent heat and chemical resistance, rigidity, strength and electrical insulating properties, as a result of which they have found application in components for hybrid, electric and duration environment-friendly vehicles as an alternative to metal materials, which helps reduce vehicle weight.

For more information, please see Segment Results on page 136.

### Segment Operating Results



### DIC Report 2017

The DIC Group is leveraging its growth-driving basic and composite technologies to continuously bring new products that satisfy the needs of users to market in the strategically important areas of inkjet inks and PPS compounds. Through such efforts, the Group is striving to realize a higher growth rate than the market.

#### Inkjet inks

To date, the DIC Group has sought to augment this business by focusing on high-value-added water-based and UV-curable inkjet inks, primarily for industrial and office-related applications. In addition to boosting sales in these markets, the Group is expanding efforts to market products for new applications such as textiles and ceramics, demand for which is expected to rise.

#### **PPS** compounds

Valued for their excellent heat and chemical resistance, PPS compounds are used widely as an alternative to metal materials in components for automotive engines and electronics equipment. To maintain its leading share of the global market, the DIC Group is promoting the expansion of production facilities with the aim of stabilizing its global supply configuration. The Group is also increasing the number of employees in sales and technical services for key automobile and automotive component manufacturers to enhance the accuracy and speed with which DIC Group products obtain approval from manufacturers.

## Progress of Major Initiatives in Fiscal Year 2016

#### Inkjet inks

Leveraging its network of production facilities, the DIC Group responded to the needs of customers worldwide by shifting to overseas production for certain products previously exported from Japan. This move helped improve the efficiency of the Group's global supply chain.

#### **PPS** compounds

The Group completed a new dedicated PPS compound production facility in the PRC, the world's largest producer of automobiles in terms of volume. By making effective use of its previously established local technical service center, the Group took steps to encourage adoption of its products by manufacturers. The Group also completed construction of a production line at the Kashima Plant for PPS neat polymer —the principal raw material in PPS compounds—as scheduled in December 2016, thereby creating a supply configuration that will enable it to respond to expanding demand.



New PPS compound production facility in the PRC

### New PPS Compound Suitable for LDS Developed



DIC recently succeeded in developing an innovative PPS compound suitable for use with laser direct structuring (LDS), a leading MID process used for forming circuits on 3D molded components. The Company has also commenced sample shipments of the new product. Because it facilitates the integration of multiple components, thus helping reduce weight, LDS is expected to find increased application in automobile manufacturing.



Formation of circuits on a 3D molded component

#### Process used for forming circuits on 3D molded components



LDS process Molded plastic doped with organic metallic compound



Laser activation Creation of circuit tracks



Electroless plating

## **Application Materials**

A Variety of Products Made Possible by the Integration and Application of DIC Technologies



President, Application Materials Segment Shinsuke Toshima





#### **Application Materials Product Division**

Industrial adhesive tapes; magnetic tapes and coated sheets; hollow-fiber membranes and modules; coextruded multilayer films; health foods and natural colorants; decorative boards, interior housing products and coatings for building materials; decorative sheets and decorative films; sheet molding compounds (SMCs), bulk molding compounds (BMCs) and processed products; molded plastic products



Enhancing waterproof smartphone construction DAITAC WS#84 series

(Double-sided adhesive tapes for waterproof mobile communications devices)

One of the first series of waterproof tapes to be developed and marketed for waterproof smartphone construction, the *DAITAC WS#84* series continues to support efforts to enhance the ability of smartphones to resist water ingress.



A superfood that provides a balanced wealth of nutrients DIC Spirulina

Spirulina is an edible blue-green algae rich in vitamins, minerals and ß-Carotene that boasts an excellent amino acid balance. Spirulina's nutritional value and popularity as an ingredient not only in health foods but also for culinary applications has earned it a reputation as a superfood.

## Segment Operating Results



#### For more information, please see Segment Results on page 136.

Having devised a new growth model, the DIC Group is stepping up the expansion of its electronics and life sciences business. At the same time, the Group is promoting decisive rationalization of its housing products business.

#### Electronics and life sciences

In industrial adhesive tapes, the DIC Group is accelerating specin initiatives with global brand owners, as well as with nascent local brand owners in the PRC, with the goal of bolstering adoption for use in smartphones and tablet computers. The Group is also promoting development efforts with a view to entering the market for vehicle-mounted displays in the future. In hollow-fiber membranes and modules, the Group is working to sustain high growth for degassing modules used in inkjet printers, for which it holds the leading global market share, and to make a full-scale entry into the market for large degassing modules for water treatment applications. The Group's aims in the area of health foods are to maintain high sales of Spirulina, a highly rated superfood, and to expand sales of Spirulina-derived natural blue food coloring *Linablue*<sup>®</sup> in North America and Europe, taking advantage of a shift in market preferences from synthetic to natural food colorings.

#### Housing products

In the area of unsaturated polyester resin molded products, the Group continues working to improve profitability through restructuring measures and decisive cost reductions. In laminated products, the Group is revamping its business model for *DIC200*, a key strategic building material, and implementing dramatic structural reforms. The Group is also working to enhance the accuracy and accelerate the process of gaining certification for segment products.

### Progress of Major Initiatives in Fiscal Year 2016

#### Electronics and life sciences

Efforts to encourage the new adoption of DIC Group industrial adhesive tapes for use in personal computers proceeded apace. In the area of hollow-fiber membranes and modules, sales of products used for the degassing of inkjet inks and in the manufacture of ultrapure water for use in semiconductor fabrication were firm. In health foods, operations commenced at the Group's new natural blue colorant extraction plant at its Spirulina production facility in the United States, built in fiscal year 2015, while efforts to elevate sales of *Linablue®* proceeded. The Group is in the process of further augmenting the plant's capacity, with completion scheduled for fiscal year 2018.

#### Housing products

In January 2017, DIC transferred its building and housing materials business to wholly owned subsidiary DIC Decor, Inc. To date, the Group has operated housing products and related businesses as independent business entities. The Group believes that combining these businesses into one entity will position it to conduct product development that reflects a more precise grasp of market needs and to enhance services.



Hollow-fiber membrane module for degassing liquids

### Production Capacity for Linablue® Natural Blue Food Coloring to be Further Expanded

HIGHLIGHT

Demand for natural blue food coloring *Linablue*<sup>®</sup>, derived from edible blue–green algae Spirulina, is rising dramatically, particularly in North America and Europe, underpinned by a rapid shift in consumer preference toward natural food colorings. With the aim of effectively locking in this demand, in fiscal year 2016 the DIC Group resolved to increase the capacity of its U.S. plant for extracting the natural blue colorant, which came on-line in fiscal year 2015, with an eye toward completion in fiscal year 2018.





natural blue food coloring



Natural blue colorant extraction plant in the United States slated for expansion



## Product Development for a Sustainable Society

# Leveraging the Power of Chemistry to Create Value for Society

Addressing issues related to climate change, energy, food security and disaster prevention is one of the most significant challenges facing the world today. The DIC Group is leveraging the power of chemistry to provide products that can help resolve such issues and further drive sustainability.





#### Value Creation

## Reduce vehicle weight by using high-performance PPS compounds as an alternative to metal materials in automotive components

The increasing danger posed by issues such as global warming and air pollution has prompted many countries to introduce even stricter fuel efficiency requirements, obliging automakers to take steps aimed at increasing fuel efficiency—and in so doing lowering CO<sub>2</sub> emissions by reducing vehicle weight. While the modification of engines and the use of different materials for vehicle bodies and fuel tanks have had a positive impact, efforts to integrate tens of thousands of components, as well as to switch to resin as the principal material used therein, are also important as automakers strive to achieve additional gram-level cuts. Further reducing vehicle weight is a particularly critical challenge for hybrid, electric, fuel cell and other environment-friendly vehicles that require the installation of heavy batteries or fuel cells.

Against this backdrop, efforts to advance the use of super engineering plastics—high-performance plastics with exceptional resistance to heat—as an alternative to metal materials in automotive components as a way to reduce vehicle weight have progressed. DIC has focused particularly on PPS compounds, which weigh half as much as aluminum and deliver superb heat, chemical and flame resistance. Since 1976, DIC has promoted products with attributes suited to use in automotive components while at the same time expanding applications from gasoline- and diesel-powered vehicles to include hybrid, electric and fuel cell vehicles, thereby contributing to improved fuel efficiency.

Using life cycle assessment (LCA)\*, a technique for evaluating a product's environmental impact, DIC has also demonstrated that using PPS compounds rather than aluminum for certain electronic control components lowers CO<sub>2</sub> emissions attributable to such components by roughly 26%–31%.

\* LCA is used to assess the environmental impact of a product across all stages of its life, from raw material extraction through development, manufacture, use and recycling or disposal.

#### Automotive Components in Which PPS is Used





#### An integrated configuration encompassing everything from polymer design through to molding compounds, underpinning a leading global market share





A key DIC strength is its integrated development and production configuration, which encompasses everything from polymer design through to mixing and compounding, enabling it to provide products tailored to the need of automakers.

DIC has developed PPS compounds that boast dimensional precision comparable to that of processed metal and a level of thermal shock resistance suitable for engine-related components, and has shifted from a short to long glass fiber compounding agent that significantly improves impact strength, fatigue resistance and retention of mechanical properties under elevated temperatures. Recently, the Company developed a new compound for hybrid vehicles that combines the inherent heat resistance and electrical insulating properties of PPS compounds with superior strength, moldability and adhesiveness, among others, and which has been adopted for use in output power controls for batteries and lithium ion battery (LiB)–related components. The new compound has also been adopted for use in onboard cameras, and DIC is pressing ahead with efforts to encourage its use in such next-generation automotive applications as millimeter-wave radar.

In response to rapidly expanding demand for PPS products worldwide, DIC is currently promoting the systematic expansion of its PPS polymer production facilities in Japan to approximately 23,000 metric tonnes by spring 2017 (22% of the global market) and is increasing the annual production capacity of its four PPS compound production facilities (in Japan, Malaysia, the PRC and Austria) to approximately 40,000 metric tonnes (27% of the global market). These moves are designed to help DIC fulfill its responsibilities as the world's largest supplier of both. Under its current medium-term management plan, DIC108, the Company has positioned PPS compounds as a key business that will drive growth going forward and has set a target for raising its share of the global PPS compounds market to 30% by fiscal year 2018.



#### DIC has developed the world's first PPS compound approved for an innovative circuit-forming process

In July 2016, an innovative PPS compound developed by DIC for use with LDS—a process for forming circuits on 3D molded components—became the first such compound to gain approval for this application. LDS involves applying a laser to the surface of a molded plastic component doped with an organic metallic compound. The laser selectively activates the metallic compound, creating tracks in which circuits are then formed. This eliminates the need for resist etching, making it possible to shrink costs and create circuit tracks on 3D molded component surfaces, which facilitates the integration of multiple components and the reduction of component size. These benefits have encouraged the expanded use of LDS by manufacturers of components for automobiles and medical devices, among others, particularly in Europe.

LDS is a proprietary technology owned by LPKF Laser & Electronics AG, a manufacturer of printed circuit board (PCB) production equipment based in Germany. Accordingly, materials produced for LDS must be approved by LPKF. Drawing on the wealth of technologies it has built up as a manufacturer of PPS compounds, DIC developed *LP-150-LDS*, a PPS compound that has met LPKF's stringent standards for approval and been registered on the company's materials list. As it preserves the renowned heat and chemical resistance of PPS products, *LP-150-LDS* can be used for automotive components, for which other LDS-grade materials are not suited. Expectations are thus high that its use will further accelerate efforts to reduce the weight as well as number of automotive components.



LDS makes it possible to create circuit tracks on 3D molded components in a three-step process

#### Key Person from DIC

#### We are creating self-contained local sales and supply configurations with the aim of becoming the undisputed global market leader.

DIC has secured a 40% share of the Japanese market for PPS compounds, but there are many markets overseas that we must still cultivate. We have established production, sales and technical service configurations in four regions, positioning us to ensure an accurate grasp of local market requirements and offer technical support, including by providing advice on molds and molding technologies and analyzing materials, thereby creating self-contained local sales and supply configurations that will support market expansion. Looking ahead, we would also like to create similar self-contained local customer service configurations around the world. PPS compounds are an outstanding, environment-friendly material. Accordingly, we expect that our customer base going forward will not be limited to automakers, but will expand to include manufacturers in such industries as housing equipment and aerospace.

PPS Products Manager and Senior Manager, PPS Products Group, Solid Compounds Product Division Toshiyuki Mori

#### Key Person from DIC

#### DIC's principal strength is its close relations with automotive components manufacturers and swift its responsiveness.

To encourage the further use of PPS compounds in automotive components, it is crucial that we promptly grasp their technical requirements and that we actively bring our proprietary know-how and new technologies to facilitate collaborative development. We must also fully leverage our integrated configuration, which encompasses everything from polymer design through to molding compounds, to promote the swift development and commercialization of new products. To these ends, we are creating opportunities to share information and strengthen communication, including organizing technological exchange meetings, so as to expand our selection of applicable materials. The effectiveness of this approach reflects the competitive advantage we enjoy thanks to our proven track record to date.

Senior Manager, Nagoya EP Sales Department, Solid Compounds Product Division Kenji Hasegawa

#### Key Person from DIC

#### As high-performance plastics, PPS compounds offer unlimited possibilities.

In addition to extremely high strength and durability, automotive components must deliver both electrical insulating and heat dissipating properties, among a host of other attributes. Manufacturers must also strive to make components thinner and smaller. The ability of PPS compounds to satisfy all of these challenging requirements underscores its suitability for a wide variety of components. By expanding applications for our PPS compound production technologies, we are contributing to efforts to reduce the environmental impact, as well as the cost, of many different manufactured products. Accordingly, simply changing our perspective makes it possible to cultivate entirely new applications for PPS compounds. The sky really is the limit.

Head Researcher, Polymer Processing Technical Group 2, Polymer Processing Technical Division Hirokiyo Nakase



### Other Efforts to Create Value for Society

## Cultivating Applications for PPS Compounds in Increasingly Diverse Fields

DIC is creating new value for society by leveraging the properties of PPS compounds to encourage its use as a high-performance alternative to metal materials in numerous fields other than automobile manufacturing. In the area of housing equipment, for example, the Company is capitalizing on the material's hydrothermal resistance, pressure resistance and toughness (sturdiness), among others, to promote its use in hot water heaters, combination faucets and other water supply equipment, and joints and valves for pipes. Going forward, DIC will work to further expand applications for PPS compounds by adding surface decoration. In the area of components for precision instruments, DIC is using PPS compounds in low-friction and low-abrasion gears and bearings. DIC is also expected to expand into the aerospace field.







Environment-Friendly Polyurethane Resins for Use in Artificial and Synthetic Leathers

## Providing Materials that Facilitate Safe and Secure Production and Use



### Value Creation

#### Promoting environment-friendly polymers worldwide

With the rapid tightening of environmental regulations in global markets, including the PRC, a shift in demand from solvent-based to water-based and solvent-free products poses a considerable challenge for manufacturers of polyurethane resins. In the polymers business, the DIC Group is advancing the swift development of environment-friendly products that respond to pertinent laws and regulations and promoting sales of environment-friendly polymers worldwide. DIC is actively expanding its polymers business in the PRC, taking a multifaceted approach that includes growing markets for products exported from Japan and produced in Taiwan and using Group sites in the PRC to further business development. As a natural extension, the Group is also looking to expand its environment-friendly polymers business beyond the PRC. In addition, DIC is exploring the idea of collaborating with the Sun Chemical Group—a DIC Group member—to encourage a broader market presence in the Americas and Europe, where environmental concerns have long been at the forefront. Looking ahead, the DIC Group will take decisive steps to invest strategically and work in collaboration with other companies to reinforce the foundation of the business, positioning it to expand sales of environment-friendly products by ensuring an accurate and timely grasp of changing market needs.

#### Contributing to the manufacture of products with a lower environmental impact

Polyurethane resins, in which molecular design technologies are leveraged to impart unique performance properties, are used in compounds for a wide range of applications, from clothing and various everyday commodities to building materials and materials for automobiles, electronics and various industrial uses. Of note, annual global production of polyurethane resins for use as raw materials and adhesives for artificial and synthetic leathers amounts to 240,000 metric tonnes, making this the Group's second-largest product group in terms of output after polyurethane foam (used in polyurethane sheets and insulating materials). Bolstered by outstanding performance features and a shift in preference from natural to artificial and synthetic leathers, demand for polyurethane resins continues to increase.

The process used to manufacture polyurethane resins for artificial and synthetic leathers uses the organic solvent dimethylformamide (DMF). VOCs emitted during this process and the health consequences of DMF residue in artificial and synthetic leathers are thus major concerns. For this reason, DMF is likely to be added to the European Union's Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) list of banned substances. Many global sportswear manufacturers around the world have

declared their intention to discontinue use of DMF by 2020. Moreover, restrictions on VOC emissions resulting from the use of solvents have been strengthened in both the PRC and Taiwan, both major supply bases for athletic shoes.

The DIC Group, which develops and manufactures a diverse range of solventborne and waterborne polyurethane resins, took prompt steps to address these and other challenges related to the use of DMF in artificial and synthetic leathers and has succeeded in developing and marketing DMF-free environment-friendly polyurethane resins with properties identical to their conventional counterparts. The Group is currently establishing a framework for providing total solutions, including raw materials and production systems, to manufacturers of athletic shoes.



Artificial and synthetic leathers used in athletic shoes must deliver an appropriate texture (soft to touch and sufficiently strong), flex resistance at room temperature and low temperatures, durability and a light weight. Ensuring competitive production costs is also a key concern. With conventional solventborne polyurethane resin, the vaporization of solvent facilitates the formation of a strong surface skin, resulting in a product that satisfies performance requirements. In contrast, the use of waterborne resins hinders the achievement of a high molecular weight and even grain, making it difficult to realize sufficient strength, durability and scuff resistance.

By combining multiple key core technologies—including polymer design technologies used in *HYDRAN* waterborne adhesive polyurethane resins, moisture-curing technologies used in *TYFORCE* solvent-free hot-melt adhesives, and foam expansion and reactivity control used in *PANDEX* thermosetting polyurethane resins—DIC has succeeded in creating an environment-friendly polyurethane resin production system that yields solvent-free, i.e., DMF-free, polyurethane resins comparable in quality to conventional solventborne products, as well as shortens process times, thereby reducing energy consumption and production costs.



## Providing a total production system that extends to processing rather than simply supplying materials

An environment-friendly polyurethane resin production system requires processing technologies, as well as molecular design technologies used in the production of resin. Accordingly, DIC collaborated with equipment manufacturers to develop production processes optimized to suit product properties and in fiscal year 2016 completed a system, which it will provide to customers together with materials. To ensure swift delivery to the PRC production bases of global



athletic shoes manufacturers, the system will be supplied through Taiwan-based Group company Lidye Chemical Co., Ltd. DIC will endeavor to establish this system, which facilitates local procurement of both resin and equipment, as an environment-friendly global standard across a wide range of industries. Of particular note, DIC's new total production system responds to the environmental requirements of automakers for materials used in vehicle interiors. Accordingly, DIC will continue working to improve the texture and durability (resistance to damage from wear, sebaceous matter, chemicals, heat, light and moisture) of artificial and synthetic leathers produced using the system, as well as to promote the system's appeal in the market.



#### Key Person of DIC

Recognizing tighter regulations as a business opportunity, we are working to define a new global standard for environment-friendly polyurethane resins.

The passing of increasingly stringent VOC emissions regulations worldwide is testing the technological capabilities of chemicals companies. We recognize this trend as a golden opportunity to leverage our comprehensive strengths to expand our business.

Success in the polyurethane resins business today demands more than the ability to provide materials. With consideration for the environment our guiding objective, we believe it is possible for us to define a new global standard by providing entire plants: in other words, comprehensive solutions. This distinctive business strategy is made possible by the DIC Group's thorough grasp of all the technologies involved, from polymer design through to production, as well as its global network of production facilities.

General Manager, Osaka Urethanes Sales Dept., Polymers Product Division Masahiro Nishi



#### Key Person of DIC

#### We must also devote considerable effort to research in the areas of design development and processing methods.

DIC is the top manufacturer of solventborne polyurethane resins in Japan. The Company also boasts a wealth of development and production technologies in a diverse range of other areas, from epoxy, phenolic, acrylic and other resins to pigments. Combining compounding and other core technologies makes it possible to create new performance properties. In line with the goal of providing total solutions, that is, solutions that extend as far as processing, the people in my laboratory are involved not only in flask synthesis but also in equipment development. For this reason, we strive to always keep abreast of the latest information and technological trends.

Group Manager, Polymer Technical Group 6, Polymer Technical Div. 2 Tamotsu Sakamoto



### IZANO Folding Emergency Helmets

## Delivering Easy Storability and Portability, *IZANO* Helmets Help Prevent and Mitigate Injuries in Disaster Situations



#### Value Creation

#### Design a helmet that is suitable for use in self-help, mutual aid and public assistance initiatives during disaster situations

Imagine having to evacuate during an earthquake or typhoon. Think of the spine-chilling experience of seeing a pane of glass from a window fall onto a road and shatter during a live television broadcast. In dangerous situations such as these, the first priority is to protect one's head. Falling objects are particularly dangerous. In residential areas, these include roof tiles, the outdoor units of air conditioners and potted plants. In shopping and office districts, hazards include signboards, neon signs and shards of glass.

Wearing a helmet during an evacuation keeps one's hands free, reducing the risk of stumbling and allowing one to proceed safely while carrying a flashlight. However, despite awareness of the benefits of helmets, many are resistant to the idea of having them on hand owing to a lack of storage space and unfamiliarity with their use. Accordingly, there is a clear demand for emergency helmets that offer both efficient storability and outstanding performance.

A critical aspect of efforts to protect people and reduce injuries in disaster situations is to ensure the seamless integration of self-help (protecting oneself), mutual aid (rescue and relief) and public assistance (recovery and reconstruction) initiatives. High-performance, easy-to-use emergency helmets that are appropriate not only for evacuation use and inclusion in emergency supplies, but also for post-disaster recovery and reconstruction efforts, are thus recognized as indispensable.



## A Distinctively DIC Response An attractive helmet that boasts professional-level specifications and folds to half



Having recognized that a helmet that boasts easy and convenient storability, portability and professional-level strength would be ideal for a wide range of applications, from disaster situations and post-disaster recovery and reconstruction to construction sites and industrial facilities, Group company DIC Plastics, Inc., which has 60 years of experience manufacturing helmets, developed the *IZANO* helmet, which features a groundbreaking design and structure. The first nonseparation foldable helmet to comply with standards for headgear that protects against head injuries caused by flying and falling objects and falls from high places established by Japan's Ministry of Health, Labour and Welfare (MHLW), the *IZANO* helmet received an award in the 2014 edition of Japan's Good Design Awards.



#### Vitamin colors make it easy to distinguish affiliated organizations or departments and encourage a positive psychological response



## *IZANO* helmets have been adopted for use by the police, local governments and private-sector companies, with sales to date in excess of 350,000 units

Realizing a superior helmet involves developing outstanding design and structure, producing prototypes, conducting tests, analyzing findings and then repeating these processes multiple times. DIC's ability to complete all such processes within the DIC Group is a key strength. Overseeing everything from plans for design and construction and the selection of resin through to the use of 3D computer-aided design (CAD) for precision engineering and computer simulation of structural and resin flow analysis thus enabled DIC to optimize all aspects of the *IZANO* helmet. To ensure reliability, DIC also used mechanism analysis in-house using high-speed cameras to conduct impact tests.

The quality and performance features of the helmets developed through this process have earned solid praise in many quarters. More than 350,000 units have been sold since the helmet was launched in October 2013, with customers including the Tokyo Metropolitan Police Department, which uses them for off-duty personnel mobilized in the event of a disaster.





Impact testing and analysis data

#### Key Person from DIC

#### Development efforts began with experiencing a 7.0 earthquake.

Efforts to develop the *IZANO* helmet began with the goal of realizing an emergency helmet suited to use in a greater variety of situations. Having recognized the importance of a product concept that reflected the perspectives of actual users, development and marketing staff went to a disaster simulation facility where they were able to experience a simulated earthquake registering 7.0 on the Japanese scale of seismic intensity. This inspired a wealth of ideas and we looked at numerous models—a repetitive process that took close to two years to finally complete. Combining various materials and components to maximize safety, quality and performance is where my team excels, but the ability to reflect diverse technologies into the design and engineering processes and then manufacture the resulting products ourselves is a key competitive strength of the DIC Group.

Industrial Designer; Manager, Safety Materials Technical Group, Safety Materials Technical Department, DIC Plastics, Inc. Toshiki Nakamura

#### Key Person from DIC

#### A female architect told me this was exactly the helmet she has been looking for.

At one of the trade fairs in which we participated, a female architect spotted our display and said that the *IZANO* helmet was exactly what she had been looking for. She went on to tell me that she could not stand the helmets usually handed out to visitors at construction sites and had been searching for a helmet that delivered both professional-level safety and an attractive design, and that could be carried in her bag. In that our aim had been to develop a helmet that was not only suited to disaster situations but also boasted outstanding versatility, her comments made me extremely happy. I look forward to developing other innovative products that respond precisely to the diverse needs of our customers.

Manager in Charge, Safety Materials Sales Group, Safety Materials Sales Department, DIC Plastics, Inc. Yoshitaka Ikegami







## Other Efforts to Create Value for Society

#### Ryojin Industrial Helmets Reduce the Risk of Heatstroke

Against a backdrop of rising ambient temperatures, a consequence of factors such as the worsening impact of global warming and the urban heat island effect, preventing heatstroke on construction sites on hot days has become an urgent challenge. In response, DIC Plastics has developed the aerated, heat-blocking and lightweight *Ryojin* industrial helmet. *Ryojin* reduces the risk of heatstroke thanks to a combination of front ventilation, provided by forehead vents that efficiently draw in air and push out heat; improved heat-blocking performance thanks to heat barrier material that is kneaded into rather than coated on to the resin; and a thinner, innovative frame construction that reduces discomfort.





#### Alleviating Neck and Shoulder Pain with Keijin Industrial Helmets

Demand is high for lighter protective equipment—including helmets—to reduce the burden on construction and electrical line workers, who must wear extensive protective equipment and carry tools for long periods of time. To date, lightweight helmets have been made with fiber-reinforced plastics (FRPs). Such helmets deliver both lightness and strength, but do not comply with standards for withstanding voltage, which protective equipment must satisfy to be approved for use in electrical line work. In response, DIC Plastics developed *Keijin*, a lightweight industrial helmet made with acrylonitrile butadiene styrene (ABS), the polymer used in conventional industrial helmets. *Keijin* helmets are manufactured using a proprietary in-molding process that molds the shell and liner together in one piece. DIC Plastics is marketing these helmets as an attractive solution that helps alleviate neck and shoulder pain for workers, an issue of particular concern given the increasing number of women and seniors taking jobs at worksites.



Cross-section of in-molded helmet

#### Actively Promoting the Reuse and Recycling of Plastics

Designed primarily for emergency use, the *IZANO* CAP boasts an impact-resistant protector, developed in collaboration with materials manufacturers, that is made from collected and recycled PET bottle caps. DIC also uses recycled plastics in small containers used to store tools and other items, as well as in planters. As a member of the Japan Helmet Manufacturers Association (JHMA), DIC Plastics is working with the Association's recycling center to promote the recycling of and reduction of waste from end-of-life helmets.


# TOPIC

**Social Imperative** 

# Helping Improve Food Packaging to Extend Product Shelf Life

Sun Chemical Promotes Initiatives Aimed at Addressing an Important Social Imperative

Sun Chemical, which oversees the DIC Group's operations in Europe and the Americas, is one of the world's leading manufacturers of printing inks. The company develops and supplies a broad range of products that address diverse social imperatives.

Shelf life and the lightweighting of packaging are business-critical activities for brand owners in today's marketplace. Under the increasing scrutiny of regulations worldwide,

packaging must protect products, giving them optimal freshness and shelf life, whether in transit, in-store or at home. This applies as much to products with a long shelf life as to fresh produce, which needs packaging that will preserve color, fragrance, texture and appeal, as well as ensure that it remains safe to consume.

Many external factors impact negatively on shelf life and freshness, from oxygen and UV light to moisture and odors. Protective packaging needs to be functional. While traditional packaging materials such as glass and metal are impermeable, their weight can be a disadvantage, increasing transportation costs and carbon footprint.

This has led to the trend of utilizing plastic packaging formats, including pouches, but to create packaging that enhances shelf life, these must be carefully structured to deliver optimum shelf life, in some cases using a considerable number of layers.

## Sun Chemical's Response

The packaging market's need for products that deliver enhanced shelf life, as well as sustainable, recyclable, metalfree and waste-reducing solutions, can be addressed through a revolutionary approach that replaces current barrier technology with printable oxygen-barrier coatings.

Sun Chemical's SunBar® (Aerobloc) oxygen-barrier coatings are technically advanced next-generation products

designed to enable the lightweighting of packaging by removing ethylene vinyl alcohol (EVOH) polymer layers, as well as offering improved laminate flexibility. *SunBar®* (Aerobloc) oxygen-barrier coatings provide a smooth, homogenous, pinhole-free layer that can be easily overprinted with inks and laminated to a variety of secondary films. These coatings are cost-effective, compostable and printable with either flexo or gravure inks, allowing for lighter-weight packaging, a reduced carbon footprint and easy application with few changes to current equipment.

Sun Chemical's recent partnership with acpo, ltd., allows the latter to deliver *SunBar*<sup>®</sup> (Aerobloc) pre-coated films to converters who cannot coat their own films. acpo specializes in coating thin films with state-of-the-art equipment. These customers now have access to economically priced alternative barrier films with improved barrier protection without the need for capital investment in a coating unit.



# VOICE from the DIC Group

# SunBar® (Aerobloc) can resolve many of the challenges that brand owners are facing.

Brand owners today face a variety of challenges—from sustainability, regulatory compliance and food safety to lightweighting packaging to cut costs—while at the same time enhancing product shelf life. Coated plastics offer barrier improvements, but also have downsides that pose substantial hurdles to overcome. *SunBar®* (Aerobloc) oxygen-barrier coatings serve as a solution to offset these deficiencies and can resolve many of the challenges that brand owners are facing in today's competitive marketplace.

Product Manager, Coatings, Sun Chemical Corporation Robert O'Boyle



# **Directors, Corporate Auditors and Executive Officers**

## Directors

(As of April 2017)



Representative Director Yoshiyuki Nakanishi 2 Representative Director Masayuki Saito

3 Director Yoshihisa Kawamura 4 Director

5 Director 7 Director\* 9 Director\* Kaoru Ino 6 Director 8 Director\* Hitoshi Wakabayashi Hideo Ishii Yukako Uchinaga

Takao Suzuki Kazuo Tsukahara \* Outside



# > Corporate Auditors



1 Corporate Auditor Jiro Mizutani

2 Corporate Auditor

Yoshiyuki Mase 3 Corporate Auditor\*

Katsunori Takechi

4 Corporate Auditor\* Cindy Yoshiko Shirata

\* Outside



#### > Outside Director Profiles

#### Takao Suzuki

 January
 2006
 Vice President and Executive Officer, Hitachi, Ltd.

 June
 2016
 Representative Executive Officer, Hitachi Transport System, Ltd.

 June
 2016
 Chairman Emeritus, Hitachi Transport System, Ltd.

#### Yukako Uchinaga

April 204 Director and Senior Executive Officer, IBM Japan, Ltd. October 2009 Director and Executive Vice President, Benesse Holdings, Inc. April 2013 Honorary Chairman, Berlitz Corporation

#### Kazuo Tsukahara

Director and Managing Executive Officer, IHI Corporation Representative Director and Executive Vice President, IHI Corporation Adviser, IHI Corporation April 2008 April 2012 June 2014

## > Outside Corporate Auditor Profiles

Katsunori Takechi

April 200 Public Prosecutor, Civil Affairs Bureau, Ministry of Justice October 2003 Joins Anderson Mori and Tomotsune July 2011 Managing Partner, Takechi & Partners

#### Cindy Yoshiko Shirata

Anrii 2002 Professor, Nihon University College of Economics February 2010 Visiting Professor, University of Munich October 2014 Professor, Faculty of Business Administration, Bunkyo University

# > Executive Officers



President and CEO Yoshiyuki Nakanishi



Managing Executive Officer Hitoshi Wakabayashi President, Fine Chemicals Segment General Manager, Pigments Product Division



Executive Officer Kaoru Ino In Charge of Corporate Strategy Division and Kawamura Memorial DIC Museum of Art



Executive Officer Hideki Inouchi Chairman and General Manager, DIC (China) Co., Ltd. Chairman, DIC (Shanghai) Co., Ltd.



Executive Officer Sakae Yoshida General Manager, Production Administrative Division



Executive Officer Hiroyuki Ninomiya In Charge of Finance and Accounting Division



Masayuki Saito Aide to the President and CEO CFO Chairman of the Board, Sun Chemical Corporation Chairman of the Supervisory Board, Sun Chemical Group Coöperatief U.A.



Managing Executive Officer Kazunari Sakai Managing Director, DIC Asia Pacific Pte Ltd



Toshifumi Tamaki In Charge of Technical Segment (Technical Administrative Division and Corporate R&D Division) General Manager, Technical Administrative Division



Executive Officer Masaya Nakafuji General Manager, Corporate Planning Department In Charge of Osaka Branch Office and Nagoya Branch Office



Taihei Mukose In Charge of Purchasing and Logistics & Information Systems Division General Manager, Purchasing Department



Executive Officer Kazuo Hatakenaka General Manager and Senior Manager, Liquid Crystal Materials, Liquid Crystal Materials Product Division



Managing Executive Officer Yoshiaki Masuda In Charge of General Affairs and Legal Division



Managing Executive Officer Hideo Ishii President, Printing Inks Segment General Manager, Printing Inks Product Division. and Printing Inks Production Division



Executive Officer Naoyoshi Furuta Deputy Managing Director (South Asia), DIC Asia Pacific Pte Ltd



Executive Officer Koji Tanigami President & CEO, DIC Graphics Corporation



Kiyotaka Kawashima General Manager, Corporate R&D Division and Central Research Laboratories



Executive Officer Paul Koek Chief Financial Officer, Regional Financial Director, DIC Asia Pacific Pte Ltd



Managing Executive Officer Toshio Hasumi President, Polymers Segment General Manager, Polymers Product Division



Managing Executive Officer Masami Hatao General Manager, Marketing Division



Rudi Lenz President and CEO, Sun Chemical Corporation



Executive Officer Shinsuke Toshima President, Application Materials Segment General Manager, Application Materials Product Division



Masanobu Mizukoshi President, Compounds Segment General Manager, Liquid Compounds Product Division



Executive Officer Myron Petruch President, Performance Pigments, Sun Chemical Corporation

# **Corporate Governance**

## Basic Approach to Corporate Governance

The DIC Group identifies the purpose of corporate governance as being to ensure effective decision making pertaining to its management policy of achieving sustainable corporate growth and expansion through sound and efficient management, while at the same time guaranteeing the appropriate monitoring and assessment of and motivation for management's execution of business activities. With the aim of achieving a higher level of trust on the part of shareholders, customers and other stakeholders and enhancing corporate value, the DIC Group also promotes ongoing measures to reinforce its management system and ensure effective monitoring thereof.

# > Policy on Corporate Governance

DIC has prepared a Policy on Corporate Governance, which it has published on its corporate website. Policy on Corporate Governance web http://www.dic-global.com/en/about/pdf/governance\_en.pdf

# > Corporate Governance Organization

A company with internal auditors, DIC maintains a Board of Directors and a Board of Corporate Auditors. DIC has also instituted an executive officer system and has established a Nomination Committee, a Remuneration Committee, an Executive Committee and a Sustainability Committee.



## **1** Board of Directors

To accelerate decision making and reinforce corporate governance, nine directors have been elected to the Board of Directors. Of the nine, three are outside directors. In principle, the Board meets once monthly. The Board of Directors is responsible for making decisions on matters stipulated in the Companies Act of Japan, and in DIC's own regulations, as requiring Board-level approval, as well as for monitoring the execution of business activities, as reported by the executive officers.

## 2 Nomination Committee

The Nomination Committee was established as an internal committee of the Board of Directors with the aim of ensuring objectivity in the nomination of candidates for the position of director, corporate auditor or executive officer, and the dismissal of serving directors, corporate auditors and executive officers. The committee, which submits proposals to the Board of Directors, meets as necessary. At present, three of the committee's five members are outside, while the position of committee chairman is currently filled by an outside director.

## **3** *Remuneration Committee*

The Remuneration Committee was established as an internal committee of the Board of Directors with the aim of enhancing the objectivity of procedures for determining executives' remuneration. The committee, which has been entrusted with responsibility for determining the salaries and bonuses of directors and executive officers, meets as necessary. At present, three of the committee's five members are outside, while the position of committee chairman is currently filled by an outside director.

#### 4 *Executive Committee*

The Executive Committee deliberates and resolves issues related to the execution of business activities. In principle, the committee meets twice monthly. Committee members are directors and executive officers designated by the Board of Directors. Meetings are also attended by one corporate auditor as part of the auditing process. Details of deliberations and resolutions are reported to the Board of Directors.

#### 5 Sustainability Committee

The Sustainability Committee, which functions as an advisory body, meets several times annually to formulate sustainability policies and activity plans, as well as to evaluate and promote initiatives. Committee members are directors and executive officers designated by the Board of Directors. As part of audit activities, one corporate auditor also attends Sustainability Committee meetings. The committee reports the matters upon which it deliberates and the results of its deliberations to the Board of Directors.

## 6 Board of Corporate Auditors

The Board of Corporate Auditors comprises four members, including two outside corporate auditors. In principle, the Board of Corporate Auditors meets once monthly. Board activities include debating and determining auditing policies and auditing plans. Board members also report on the results of audits conducted, as well as attend important meetings, including those of the Board of Directors, the Executive Committee and the Sustainability Committee, meet with representative directors on a periodic basis to exchange information and opinions, and collect business reports from directors, executive officers and employees. In addition, DIC has established an Office of Corporate Auditors, to which it assigns dedicated personnel to assist the corporate auditors in their duties.

DIC's three outside directors have extensive experience in and knowledge of corporate management, which they are able to leverage in the performance of their duties as outside directors of DIC. Corporate auditor Yoshiyuki Mase is a qualified certified public tax accountant and has overseen corporate accounting at DIC for many years. Outside auditor Katsunori Takechi provides tax accounting services pursuant to Article 51 of the Certified Public Tax Accountant Act and has broad experience in the field of corporate law. Outside auditor Cindy Yoshiko Shirata is an academic expert in the field of accounting involved in research and education in financial accounting and corporate management.

#### 7 Internal Auditing Department

The internal auditing department is charged with internal auditing, which includes monitoring the effectiveness of internal controls at DIC and domestic DIC Group companies. For DIC Group companies in Asia, Oceania, the PRC, the Americas and Europe, internal auditing is the responsibility of local internal auditing teams.

#### 8 Accounting Auditors

DIC has engaged Deloitte Touche Tohmatsu LLC as its independent auditors. DIC strives to ensure an environment that facilitates the accurate disclosure of information and fair auditing. The corporate auditors, accounting auditors and Internal Auditing Department conduct audits from their respective independent positions, but also liaise periodically to facilitate close cooperation, thereby ensuring the effectiveness of auditing activities.

## Rationale Behind Current Corporate Governance Organization

DIC has instituted an executive officer system, a move aimed at separating decision making and implementation and thereby accelerating business execution and clarifying responsibilities. As well as appointing three highly independent outside individuals to its Board of Directors, the Company has taken steps to reinforce its monitoring of business execution. DIC also has a Nomination Committee and a Remuneration Committee, which include the three outside directors, to ensure objectivity in the nomination of, and in determining remuneration for, directors and executive officers. The four-member Board of Corporate Auditors, which includes one attorney and one university professor as outside corporate auditors, liaises with the accounting auditors and the internal auditing department. This structure ensures the effective functioning of DIC's corporate governance system.

# > System of Internal Controls

## **1** Status of the System of Internal Controls

The DIC Group maintains a keen awareness of four key objectives, which are to ensure the effectiveness and efficiency of its businesses, uphold the reliability of its financial reporting, comply with laws and regulations relevant to its business activities, and safeguard its assets. To this end, DIC has prepared and operates a system of internal controls, key components of which are summarized below, to ensure proper business activities, based upon the Companies Act of Japan and the Financial Instruments and Exchange Act of Japan. The Board of Directors hears annual reports on measures on the status of the system of internal controls, a summary of which is included in the Company's report on its business activities.

- The Company shall work to set forth the DIC Group Code of Business Conduct as the standard regarding compliance, which directors
   and employees of the DIC Group shall comply with, and to disseminate the same.
- The Company shall establish an internal notification system as a channel available for the employees of the DIC Group and set up multiple notification channels independent from channels for communication used in the conduct of business. DIC shall prepare a structure that can quickly respond to domestic and international notifications.
- In order to ensure a system in which the duties of directors are performed properly and efficiently within the DIC Group, the Company shall establish regulations regarding company organization and authority.
- 4 The Company shall formulate medium-term management plans and the annual budget based upon management policies and management strategies, and, through dissemination of the same, the DIC Group shares common goals. Reports shall be made to the Board of Directors outlining the status of the progress.
- Information pertaining to the performance of duties by directors shall be recorded, retained and managed appropriately based upon the regulations for document management. The Company shall establish regulations for systems of information management and shall prepare a system for preventing leakage of confidential information of the DIC Group.
- 6 The Company shall formulate a risk management policy and shall identify, assess, prioritize and address properly any risks that may have a significant impact on management of the DIC Group.
- The Company shall determine an administrative department for each subsidiary from the standpoints of the conduct of business and business management, and shall supervise business affairs by dispatching a director to each subsidiary.
- 8 The Company shall clarify important matters pertaining to subsidiaries that require approval of or reporting to the Company.

## **2** Basic Policy Toward Eliminating Demands by Antisocial Elements

DIC's basic policy, as outlined in the DIC Group Code of Business Conduct, is to stand firmly against antisocial elements and in no way to acquiesce to demands presented by such elements. The General Affairs and HR Department is responsible for coordinating efforts to respond to extortion or other demand presented by antisocial elements, while individuals have been put in charge of efforts at each site and within each Group company. These individuals work in close collaboration with lawyers and the police to ensure the Company's responses are resolute. DIC has also prepared and distributed a manual on appropriate responses to such demands, with the aim of raising awareness among employees.

# Outside Directors and Outside Corporate Auditors

## Number and Role of Outside Directors and Outside Corporate Auditors

DIC currently has three outside directors and two outside corporate auditors. In addition to attending meetings of the Board of Directors, the outside directors serve as members of the Nomination Committee and the Remuneration Committee, enabling them to provide supervision with an independent point of view, thereby helping to reinforce DIC's corporate governance. The two outside auditors—one an attorney specializing in corporate law and the other an academic expert in the field of accounting whose specialties are financial accounting and corporate management—advise management of the DIC Group from an expert, multifaceted and independent perspective, thereby helping to reinforce the auditing function.

#### 2 Standards Used to Evaluate the Independence of Outside Directors and Outside Corporate Auditors

DIC has established standards for evaluating the independence of individuals appointed to the position of outside director or outside corporate auditor. DIC's outside directors and outside corporate auditors are individuals who, based on these standards, are unlikely to have conflicts of interests with ordinary shareholders and who comply with criteria for the independence of directors/auditors set by the Tokyo Stock Exchange.

# **Independence Standards for Outside Officers**

DIC does not recognize individuals with the connections listed below as being independent in the appointment of outside officers.

- Individuals who are executive officers of DIC or of one of its consolidated subsidiaries at present or have been in the preceding 10 years.
   Individuals to whom any of the following items have applied in the preceding three years:
- A principal business partner of the DIC Group (a business partner with which transactions in a single fiscal year exceed 3% of the DIC Group's consolidated net sales in that year) or an executive officer of a company to which this description applies
- An individual for which the DIC Group is a principal business partner (a company with which the DIC Group's transactions in a single fiscal year exceed 3.0% of the company's consolidated net sales in that year) or an executive officer of a company to which this description applies
- S A shareholder who holds 5% or more of voting rights in DIC or an executive officer of a company to which this description applies
- ④A principal lender to the DIC Group (a lender from which loans in a single fiscal year exceeds 3% of the DIC Group's total loans in that year) or an executive officer of a company to which this description applies
- SAn individual who has received contributions in a single fiscal year that exceeds ¥10 million or belongs to a group to which this description applies
- O An accounting auditor, an accountant who has served as an accounting auditor for the DIC Group or an individual who is an employee, partner or associate of an audit firm to which this description applies

An individual to whom ③ above does not apply but who has received remuneration from the DIC Group in excess of ¥10 million in a single fiscal year as a provider or professional services, such as consulting, accounting or legal services, or an individual who belongs to a group that has received remuneration in excess of 3% of its consolidated net sales in that year as compensation for professional services, such as consulting, accounting or legal services

- Output A corporate executive of another company in the event that an executive officer of DIC is appointed to an outside officer position at that company
- 3. A spouse or relative within two degrees of kinship of individuals listed in section 1 or 2 above
- 4. An individual whose term in office as an outside officer of DIC has exceeded eight years

#### **3** *Framework for Supporting the Efforts of Outside Directors and Outside Auditors*

Prior to meetings of the Board of Directors, relevant materials are distributed to all directors, full-time auditors, outside directors and outside auditors. In addition, directors bringing matters before the Board provide explanations in advance to outside directors, while corporate auditors provide explanations as necessary to full-time auditors.

# Other Initiatives to Enhance the Corporate Governance Organization

## Composition of the Board of Directors

To enable the Board of Directors to resolve major operations-related issues, as well as to facilitate the effective oversight of management, the Board of Directors comprises outside directors, who maintain independence, and other individuals having a thorough knowledge of the businesses of the DIC Group, with consideration given to ensuring a balance among necessary knowledge, experience and capabilities. In light of DIC Group's global operations, DIC also strives to ensure diversity in the Board's composition.

With the aim or reinforcing its corporate governance organization, in March 2017 DIC increased the number of outside directors on its Board of Directors from two to three. One member of the Board of Directors is female, as is one member of the Board of Corporate Auditors.

**Composition of the Board of Directors** 



#### Composition of the Board of Directors and the Board of Corporate Auditors

	In-house	Outside	Total	Percentage of outside members
Directors	6	3	9	33.3%
Corporate auditors	2	2	4	50.0%
Total	8	5	13	38.5%

## 2 Remuneration for Executives

Remuneration for directors is determined by the Remuneration Committee, which takes into account market rates. In addition to executive compensation, which is a fixed monthly sum, remuneration for directors includes bonuses, which are linked to consolidated operating results and the degree of achievement of individual targets, and share-based compensation, which is linked to medium- to long-term operating results. Remuneration for corporate auditors is based on internal rules established by the Board of Corporate Auditors, with consideration given to ensuring a balance with remuneration for directors and corporate auditors, as well as to market rates for remuneration for auditors, and is determined through deliberations by the corporate auditors. In June 2017, DIC introduced a new Board Benefit Trust (BBT), a performance-based stock ownership plan for executives, thereby clarifying links between remuneration and degree of achievement of medium- to long-term operating results targets.

#### Remuneration for Directors and Corporate Auditors in Fiscal Year 2016

	Total remuneration	Composition of remuneration (Millions of yen)		eration	Number of directors and corporate auditors	
	(Millions of yen)	Basic salary	Bonus	Retirement bonus		
Directors (excluding outside directors)	230	165	64	_	6	
Corporate auditors (excluding outside auditors)	57	57		_	2	
Outside officers	48	48	_		4	

Note: One of the six directors retired from his position at the conclusion of the 118th Annual General Meeting of Shareholders, held on March 29, 2016.

## **3** Evaluation of the Board of Directors' Effectiveness

DIC conducts an analysis and evaluation of the effectiveness of the Board of Directors annually via a self-evaluation conducted by the directors and corporate auditors. In fiscal year 2016, the Company conducted a survey of all directors and corporate auditors regarding the activities of the Board of Directors and the Board of Corporate Auditors, responses to which were analyzed and evaluated by the Board of Directors. As a result, the effectiveness of the Board of Directors was confirmed.

DIC will continue to review and modify the evaluation standards used in evaluating the Board of Directors' effectiveness. DIC recognizes modifying standards related to the Board of Directors and enhancing communications between the Board and executive officers, among others, as key challenges and will continue working to promote improvements.

# Sustainability Report

Amid rising environmental concerns, including climate change, and increasingly urgent social imperatives, companies today face an evermore diverse array of challenges, including rising awareness of the need to achieve sustainability in a manner that takes into account the environment, ecosystems and socioeconomic issues. The DIC Group launched its corporate social responsibility (CSR) program in fiscal year 2007. Having further clarified the overall direction of related initiatives as "sustainable growth," effective from fiscal year 2014 the Group changed the designation used across its program from "CSR" to "sustainability." In line with its basic sustainability policy, the DIC Group promotes a variety of sustainability initiatives worldwide and works to maintain an accurate grasp of social imperatives pertaining to environmental, social and governance (ESG)-related issues.

## Basic Sustainability Policy (Formulated in January 2014)

The DIC Group is dedicated to conducting its business while retaining a strong commitment to five key concepts: preserving safety and health, ensuring fair business practices and respect for diversity and human rights, maintaining harmony with the environment and advancing its protection, managing risks, and creating value for society through innovation. DIC Group employees will continue working to deliver the value that its stakeholders—including its customers, suppliers, local communities, shareholders and investors, and employees—expect, showing ingenuity and a sense of responsibility. The Group itself will strive to remain an organization that contributes to sustainability for society and the global environment by capitalizing on its businesses to achieve unfaltering growth, thereby enhancing its own sustainability.

# Sustainability Framework and Themes

## **Themes**

To foster concrete measure, in fiscal year 2007 the DIC Group's identified 12 key themes as a framework for implementing its CSR framework. Subsequently, the Group partially revised these themes in response to changes in the external environment and the progress of its efforts. Today, the Group's sustainability framework comprises 11 key themes, which are categorized as basic themes, themes that demonstrate unique capabilities and themes that combine elements of the previous two classifications. The Group implements a broad range of global initiatives that take into account its responsibility to ensure proper product stewardship, as well as its position as a leading manufacturer of fine chemicals.



## Deployment

In line with its basic sustainability policy, the DIC Group has formulated medium-term (fiscal years 2016–2018) policies and creates annual activity plans for each of these themes. The Group makes use of the plan–do–check–act (PDCA) cycle in promoting initiatives and reports on its achievements annually in the DIC Report. The Marketing Division, the Technical Administrative Division and individual product divisions, sites and overseas and domestic DIC Group companies are charged with pursuing effective sustainability programs by formulating their own activity plans, ensuring that the Group's policies permeate their organizations and labor forces and linking sustainability initiatives to business targets.

# System for Promoting Sustainability Initiatives

The DIC Group's system for promoting sustainability initiatives centers on the Sustainability Committee, which answers directly to the president and CEO. The committee is tasked with reporting on the status of sustainability themes, as well as with proposing policies and programs for advancing sustainability and deliberating on critical related matters.

## Members of the Sustainability Committee

Executive vice president, Executive officer in charge of the Finance and Accounting Division, Executive officer in charge of the Corporate Strategy Division, Executive officer in charge of the General Affairs and Legal Division, General managers of the product segments, General Manager of the Marketing Division, General Manager of the Production Administrative Division, General Manager of the Technical Administrative Division, Executive officer in charge of the Purchasing and Logistics & Information Systems Division, CEOs of regional headquarters, Corporate auditors.



# > Ensuring DIC Remains a Globally Trusted Corporate Citizen with a Proud Reputation

## Leveraging its Position as a Global Manufacturer of Fine Chemicals to Support the UNGC

Seeking to fulfill its responsibilities as a member of the international community in a more proactive manner, in December 2010 the DIC Group pledged its support for the 10 principles put forth by the United Nations (UN) and became a signatory to the United Nations Global Compact (UNGC).

Inaugurated in 2000, the UNGC is a voluntary initiative for companies that seek to achieve sustainable development worldwide. More than 13,000 companies and organizations have pledged their support for the UNGC in the belief that global sustainable development is possible if companies align their business practices with, and fulfill their social responsibilities in, 10 globally accepted principles in the areas of human rights, labor, the environment and the prevention of corruption.



WE SUPPORT

#### Applying the 10 Principles of the UNGC

The DIC Group Code of Business Conduct conforms with the 10 principles of the UNGC. The Group is capitalizing on its participation in this program to advance its operations around the world, while at the same time giving evergreater consideration to the environment and human rights, with the aim of ensuring sustainability for global society.

#### 10 Principles of the UNGC (official version)

	Principle 1	Businesses should support and respect the protection of internationally proclaimed human rights; and
Human rights	Principle 2	make sure that they are not complicit in human rights abuses.
	Principle 3	Businesses should uphold the freedom of association and effective recognition of the right to collective bargaining;
Labour	Principle 4	the elimination of all forms of forced and compulsory labour;
Labour	Principle 5	the effective abolition of child labour; and
	Principle 6	the elimination of discrimination in respect of employment and occupation.
	Principle 7	Businesses should support a precautionary approach to environmental challenges;
Environment	Principle 8	undertake initiatives to promote greater environmental responsibility; and
	Principle 9	encourage the development and diffusion of environmentally-friendly technologies.
Anti-corruption	Principle 10	Businesses should work against corruption in all its forms, including extortion and bribery.

#### Complying with ISO 26000

The DIC Group operates in a manner that is consistent with ISO 26000, released in November 2010, which provides businesses and organizations guidelines for operating in a socially responsible manner.

# The 2030 Agenda for Sustainable Development

At the UN Sustainable Development Summit in September 2015, a proposal titled "Transforming our world: the 2030 Agenda for Sustainable Development," later summarized as the Sustainable Development Goals (SDGs), was adopted with the participation of more than 150 UN member states. The agenda, which succeeded the Millennium Development Goals (MDGs), encompasses 17 goals and 169 targets. All UN member states are expected to mobilize efforts to attain the 17 goals, essential to sustainable development for the planet, by 2030. The DIC Group pledges to contribute through its business activities to the success of the SDGs.



Note: These SDG icons are used in this report (pages 47–122) to identify pertinent DIC initiatives. For more information on the SDGs, please see: http://www.un.org/sustainabledevelopment/sustainable-development-goals/

# Compliance

## Towards Fair and Transparent Corporate Activities



#### Goals and Achievements of Major Initiatives Evaluations are based on self-evaluations of current progress. Key: \*\*\* = Excellent; \*\* = Satisfactory; \* = Still needs work

Objectives of initiatives	Goals for fiscal year 2016	Achievements in fiscal year 2016	Evaluation	Goals for fiscal year 2017
Enhance awareness of	Create and commence implementation of a DIC Group Code of Business Conduct e-learning	<ul> <li>A contract was concluded with an e-learning services subcontractor and the content of the program was confirmed.</li> </ul>	**	Achieve target for percentage of employees participating in the e-learning program (90%).
compliance.	program. Create and commence implementa- tion of a proposal for responding to Japan's Corporate Governance Code.	A new Policy on Corporate Governance was formulated. Response measures were implemented in line with this policy.		Encourage use of the whistle-blowing system to promptly identify and correct compliance violations.
Conduct business fairly.	Eliminate violations of antitrust, anti-corruption and other key legislation.	No significant violations of the DIC Group Code of Business Conduct occurred.	***	Continue working to eliminate violations of antitrust and anticorruption laws.

## Basic Approach to Compliance

Compliance in the DIC Group encompasses not only obeying laws but also acting in a manner that is in keeping with social norms and the expectations of customers, communities and other stakeholders. With the aim of ensuring sustainable growth for businesses that are both fair and transparent, DIC formulated the DIC Group Code of Business Conduct, a unified set of guidelines the adherence to which it considers to be the foundation of compliance. DIC compels all DIC Group employees to conduct themselves in accordance with the code.

# > The DIC Group Code of Business Conduct

The DIC Group completed the DIC Group Code of Business Conduct in July 2014. The code not only mandates compliance with national laws and international rules but also presents 10 principles essential to the professional conduct of DIC Group employees. The DIC Group Code of Business Conduct has since been translated into 25 different languages to ensure that DIC Group employees worldwide share the Group's values and commit themselves to doing what is right, as well as to acting with common sense and an understanding of individual responsibilities, in all aspects of their work.

 $\label{eq:linear} {\tt DIC Group \ Code \ of \ Business \ Conduct: \ web \ http://www.dic-global.com/en/csr/pdf/code_of_business\_conduct\_en.pdf} }$ 

## 10 Principles Essential to Professional Conduct

- 1 Your Rights as an Employee: Respect, Dignity, Privacy
- 2 Environment, Safety and Health
- 3 Your Responsibility to Avoid Potential Conflicts of Interest and to Protect Group Property
- 4 Anti-Corruption and Anti-Bribery Policy
- 5 Your Relationship with Governments and Government Officials
- 6 Your Relationship with Customers, Suppliers, and External Third Parties

Proper Accounting and Internal Controls Relating to Financial Reporting

- Money Laundering and Anti-Terrorism
- 8 Forced Labor, Child Labor, Conflict Minerals
- Insider Trading

# > Initiatives to Promote Compliance

In addition to the DIC Group Code of Business Conduct, the Group promotes compliance through the following initiatives:

- Training focused on legal issues to improve compliance awareness is provided for employees at point of hire, when promoted and before overseas transfers. In addition, intranet-based comprehension checks are provided to promote awareness of the DIC Group Code of Business Conduct in Japan, the Asia–Pacific region and Greater China. Participation in all three regions averages 98%-plus of eligible employees.
- Ocmpliance officers are appointed at all regional headquarters—DIC Corporation (Japan), Sun Chemical Corporation (the Americas and Europe), DIC (China) Co., Ltd. (the PRC), and DIC Asia Pacific Pte Ltd (Asia and Oceania)—to spearhead global compliance efforts.

The DIC Group vows that it will not violate the principles of the DIC Group Code of Business Conduct, even if such a violation would appear to profit the Group. As a corporate citizen, the Group also pledges to respect social norms and act in a sound and socially acceptable manner. In fiscal year 2016, there were no serious violations of compliance laws.

# Establishing and Operating a Whistle-Blowing System

The DIC Group has established a whistle-blowing system through which one can directly report an issue or question regarding compliance to the division responsible for compliance. Since fiscal year 2014, the Group has maintained whistle-blowing hotlines that can handle reports in the languages of more than 160 countries. The Group has also devised strict rules under this system to protect whistle-blowers from retaliation, and is working to ensure the system functions in a proper manner.

When a report is received, the Group responds swiftly and appropriately, giving due consideration for pertinent laws while also incorporating internal and external opinions, to promptly identify and correct misconduct and other compliance violations as quickly as possible.



# Antitrust and Anti-Corruption Legislation

The DIC Group has formulated a basic policy to comply with antitrust legislation and made Groupwide efforts to ensure fair business practices. The DIC Group Code of Business Conduct includes rules for complying with antitrust legislation and prohibits involvement in corruption. Since fiscal year 2014, the Group has held more than 160 presentations regarding antitrust and anti-corruption legislation for relevant employees to ensure strict compliance with the laws of the countries in which it operates. In fiscal year 2016, a presentation on compliance, including the content of the DIC Group Code of Business Conduct—notably compliance with antitrust legislation and regulations against corruption—and effective use of the whistle-blowing system, was held at a meeting of Group managing directors in Greater China.

# > Promoting Compliance with Legislation Regarding the Timely Payment of Subcontractors

With the aim of enhancing understanding of the importance of appropriate and fair transactions with subcontractors, the Legal Division held presentations on legislation regarding the timely payment of subcontractors for the purchasing departments of domestic DIC Group companies that incorporated case studies. In January 2016, DIC prepared the Manual for Internal Auditing of the DIC Group's Compliance with Japan's Act against Delay in Payment of Subcontract Proceeds, Etc. to Subcontractors and standardized audit procedures, thereby creating a framework for conducting audits in a more efficient manner. The Group also encouraged employees in related positions to participate in programs sponsored by external organizations, including a workshop on promoting adherence to the Act sponsored by the Japan Fair Trade Commission and the Small and Medium Enterprise Agency.

# Taxation Compliance

In accordance with the DIC Group Code of Business Conduct, the DIC Group complies with laws related to taxation, completes appropriate procedures and fulfills its obligation to meet payment deadlines.

As an organization with global operations, the DIC Group is aware of risks associated with transfer price taxation and of its obligation to pay the proper taxes in the proper jurisdictions as appropriate for its business operations.

"Make sure that your business relationships with the Group's customers, suppliers, competitors, and governments comply with all applicable laws, including competition, antitrust, anti-bribery, financial transaction, tax, and anti-terrorism laws." (Excerpt from "What Are The Business Conduct Basics?, " Page 4, DIC Group Code of Business Conduct)

# **W** Risk Management

# **Reducing Business Risks and Preventing the Recurrence of Incidents**

## Goals and Achievements of Major Initiatives Evaluations are based on self-evaluations of current progress. Key: \*\* \* = Excellent; \*\* = Satisfactory; \* = Still needs work

Objective of initiatives	Goals for fiscal year 2016	Achievements in fiscal year 2016	Evaluation	Goals for fiscal year 2017
Ensure business continuity for the DIC Group.	<ul> <li>Foster risk management for each Group company, mainly through the Risk Management Subcommittee.</li> <li>Regarding governance at subsidiaries, prepare a system that incorporates internal controls.</li> <li>Continue to prepare and renew BCPs and implement training to enhance viability. Prepare and renew manuals and plan and undertake various training programs to ensure that the corporate headquarters' crisis management system functions effectively.</li> </ul>	<ul> <li>Awareness of the Group risk management policy and risk management initiatives was encouraged among Group companies in Japan and support provided for companies' efforts.</li> <li>The formulation of response measures was completed for 15 priority risks. Regarding governance at subsidiaries, steps were also taken to reinforce governance for subsidiaries by reviewing standards for appointing directors, management guidelines and training, among others. Efforts to strengthen internal controls through the identification of priority risks continued.</li> <li>Drills and training were implemented for product division BCP officers and product division–specific BCPs were revamped.</li> <li>To ensure the smooth functioning of task forces, manuals, systems and equipment were improved and replaced and map-based simulation exercises were conducted for members to raise the awareness of task force members and increase the effectiveness of the crisis management configuration. A crisis management configuration was formulated, equipment provided and disaster drills conducted based on a hypothetical scenario involving a major disaster at the corporate headquarters.</li> </ul>	***	<ul> <li>Deploy a risk management system that conforms with the risk management policy and reinforce global awareness of the system.</li> <li>Promote ongoing Risk Management Subcommittee-led efforts to systematically implement response measures for critical risks, including governance at subsidiaries.</li> <li>Promote the ongoing improvement of product division BCPs and encourage communica- tion between product divisions and plants.</li> <li>Advance efforts to reinforce the corporate headquarters' crisis management configura- tion and promote safety measures overseas.</li> </ul>

# **Basic Approach to Risk Management**

The DIC Group undertakes risk management initiatives with the aim of appropriately and flexibly addressing changes in its operating environment and the diversification of risks, and of swiftly mitigating damage. The Group recognizes risks in three principal categories: externally caused risks that are beyond its control, corporate risks that can be prevented and business risks that should be handled by the relevant divisions/departments. The Risk Management Subcommittee, which is a subordinate committee of the Sustainability Committee, oversees management of these risk responses.

# Risk Management Policy

The DIC Group first introduced risk management initiatives in 2001 by creating the Compliance Committee and setting up reporting channels. Following the inauguration of the Risk Management Subcommittee in May 2012, the Group undertook initiatives aimed at responding to serious natural disasters and promoting business continuity management (BCM). Since fiscal year 2014, the Risk Management Subcommittee has focused on establishing a risk management policy and a risk management system, efforts that are designed to further enhance corporate value Groupwide. In a bid to ensure the effective and sustainable implementation of initiatives, in January 2015 the Group introduced a newly formulated risk management policy.

	The DIC Group undertakes risk management initiatives with the aim of appropriately and flexibly addressing changes in the operating environment and the diversification of risks, and of swiftly mitigating damage.
2	Definition of risks and risk management The DIC Group's definition of risk and risk management is as follows: 1. Risk: All uncertainties that threaten the DIC Group's sustainability and business goals. 2. Risk management: Initiatives to enhance corporate value by managing all risks to the DIC Group from a Groupwide perspective.
8	<ul> <li>Risk management initiatives</li> <li>1. The DIC Group comprehensively evaluates all risks based on their potential impact on operations and likelihood of occurring, among others, and prioritizes systematic and effective responses.</li> <li>2. The DIC Group constructs and validates risk management systems by repeating the plan-do-check-act (PDCA) cycle.</li> <li>3. The Risk Management Subcommittee shares responsibilities with the risk management teams of individual businesses to properly deploy risk measures within the DIC Group. The conference regularly reports on its activities to the Sustainability Committee.</li> </ul>

In fiscal year 2016, DIC began encouraging awareness of its risk management policy across the global DIC Group by publishing information on the policy, as well as on risk management initiatives, on its in-house electronic noticeboard and through the Group newsletter, *DIC Plaza*. In Japan, the Company also sought to promote and raise awareness through the provision of training to plant general managers and senior executives of domestic Group companies.



Meeting of the Risk Management Subcommittee

# Risk Definition and Risk Owners

The DIC Group recognizes risks in three principal categories. The Group manages these risks by clarifying specific risk owners, which are the divisions/departments responsible for implementing responses.

	Risk categories	Main risk owners
Business activities	Risks that should be dealt with by relevant departments These are risks to be considered in the course of conducting business, including those that affect production, development, investment and procurement.	<ul> <li>Product divisions</li> <li>Production and technical administrative divisions</li> <li>Purchasing departments</li> </ul>
Corporate risk management	Risks that should be dealt with by specialized departments Unlike risks that should be dealt with by relevant departments, these are risks that affect all Group business activities and can be addressed at the corporate level. Examples include risks related to information management and legal and regulatory compliance.	<ul> <li>Corporate headquarters' administrative divisions</li> <li>Corporate planning departments</li> </ul>
activities	Risks beyond control These are risks arising from natural events and social circumstances.	<ul> <li>Risk Management Conference</li> <li>Corporate headquarters' administrative divisions</li> <li>Sites</li> </ul>

# Risk Management System

In the process of formulating the risk management policy, the Risk Management Subcommittee established the DIC Group risk management system. This system begins with the distribution to directors of survey questionnaires regarding risks with the potential to interrupt the Group's businesses. Based on survey results, the subcommittee determines priority risks. Risk management plans are produced and risk response measures implemented, improved and reviewed by executives, thereby completing the PDCA cycle, with the aim of facilitating ongoing risk reduction.

DIC positioned fiscal years 2014–2016 as the inaugural phase of risk management predicated on the new system, with subsequent steps to be repeated annually, leveraging knowledge and experience gained. Based on survey results, the subcommittee determines priority risks. The administrative groups that comprise the subcommittee spearhead the assignment of an owner to each risk and work with related departments to implement response measures. A total of 16 priority risks, including "earthquakes, tsunami, volcanic eruptions" and "currency and interest rate fluctuations," were identified as risks to be addressed during this phase.

Looking ahead, DIC will continue to promote awareness and dissemination of the risk management policy and the risk management system. To enhance BCM, corporate headquarters will spearhead the preparation of Business Continuity Planning (BCP) Guidelines for lateral deployment across the DIC Group, which will be optimized to account for the situation on the ground in various countries and territories.







#### The 12 Main Priority Risks for which the Risk Management Committee Has Adopted Response Measures

- Currency and interest rate fluctuations
- Intellectual property
- Governance of subsidiaries
- 4 Product liability
- 9 Pandemics
- 6 Climate change
- Decline in debt ratings
   Information security

  - Operations of overseas business units
  - Earthquakes, tsunami, volcanic eruptions
  - Facility-related accidents
  - D Ability to foster human resources and pass on skills

## > Progress of Response Measures in Fiscal Year 2016

In fiscal year 2016, the Risk Management Subcommittee completed the implementation of risk management plan measures to address 15 of the 16 priority risks, that is, all but "governance of subsidiaries," which is particularly broad in scale and will thus be carried over. The effectiveness of measures was assessed and an executive review conducted, based on which the designation for all 15 was shifted from "priority" to "routine." The subcommittee will continue to apply the PDCA cycle, taking decisive steps to further enhance DIC's ability to manage these risks.

DIC's first step in fiscal year 2017 was to incorporate materiality into the risk identification process. As a result, the Company identified six new priority risks to be addressed in fiscal year 2017, all of which have the potential to negatively impact business opportunities and/or growth if not addressed appropriately. The Company is currently taking decisive steps to address these risks.

### **New Priority Risks**

- 1 Insufficient ability to create next-generation businesses 2 Insufficient management of/responses to stricter regulations for chemical substances
- 3 Inadequacy of/delays in efforts to foster human resources 4 Inadequacy of/delays in efforts to establish an optimal global production configuration
- (5) Inadequacy of global R&D capabilities (6) Inadequacy of/delays in BCM (7) Governance of subsidiaries (carried over from fiscal year 2016)

#### Examples of Response Measures to Selected Priority Risks (Fiscal Years 2014–2016)

Risk	Possible negative impacts	Principle response measures
Currency and interest rate fluctuations	Currency rates (sharp increase in the value of the yen): Decrease in the profitability of exports Interest rate (increase): Increase in interest burden	<ul> <li>Currency rates: Review structure of foreign currency-denominated assets and liabilities; invest in emerging economies; promote the centralized management of foreign exchange risk for corporate transactions</li> <li>Reduce interest-bearing debt</li> </ul>
Facility-related accidents	Serious industrial accident; explosion and fire; occupational accident; damage due to earthquake or power failure	<ul> <li>Provide training regarding pertinent laws and regulations</li> <li>Provide safety training; promote risk assessment and process safety management (PSM)</li> <li>Prepare restoration plans</li> </ul>
Intellectual property	Litigation related to intellectual property infringement; suspension of business or R&D indemnity payments	<ul> <li>Increase acquisition of strategic patents that keep competitors at bay</li> <li>Improve patent information-collecting capabilities in the PRC, ROK and Taiwan</li> </ul>
Earthquakes, tsunami, volcanic eruptions	Death and injuries arising from major earthquakes, tsunami or volcanic eruptions; inadequate efforts to assist stranded commuters and delays in the restoration of operations; loss of management resources; suspension of operations; restoration costs	<ul> <li>Collect basic information and develop response framework for domestic production facilities</li> <li>Provide support for efforts to assess the effectiveness of product-specific BCPs</li> </ul>
Governance of subsidiaries	Increase in control risks affecting the execution of subsidiaries' businesses attributable to a weakening of awareness of the meaning of and/or methodologies used in risk management on the part of subsidiaries' presidents	<ul> <li>Create and set down prerequisites for the appointment of directors, management protocols and the suitability of executives at subsidiaries</li> <li>Enact rules and standards of conduct for management of affiliated companies</li> </ul>
Information security	Significant loss of data due to physical damage; viruses resulting from access to malicious websites; theft or leak of information resulting from deliberate or negligent individual actions	<ul> <li>Update antivirus system for computers</li> <li>Rebuild network systems</li> <li>Promote employee training regarding rules and guidelines</li> </ul>
Pandemics	Depletion of personnel due to rapid increase in contraction among employees and their families; official restrictions on movement hindering the ability to commute, take domestic or overseas business trips and/or conduct regular operations	<ul> <li>Confirm crisis response preparations at individual sites; prepare crisis management frameworks and manuals; establish Groupwide crisis management infrastructure</li> <li>Create product-specific BCPs based on a hypothetical pandemic scenario</li> </ul>

### TOPICS

#### Initiatives to Strengthen Governance at Subsidiaries

The DIC Group comprises 174 companies in 63 countries and territories. Two-thirds of the Group's employees are located at, and more than half of its consolidated net sales are generated by, bases outside of Japan. DIC recognizes that ensuring subsidiaries share the same values and vision—despite differences in culture, social systems and customs—and maximize management resources, while at the same time complying with local laws, regulations and rules, is critical to sustainable growth for the Group.

It goes almost without saying that in the event of a transgression, an incident of noncompliance or an unforeseen contingency at an overseas DIC Group base, there is a risk that the DIC brand image could be negatively affected, causing damage to the Group as a whole. DIC has thus positioned governance at subsidiaries as a crucial risk requiring ongoing initiatives and will continue to promote efforts to reinforce the governance configurations of subsidiaries worldwide.

#### Framework for Supporting the Management of Subsidiaries

As an organization with global operations, DIC has worked continuously to create internal controls systems and establish governance configurations for its subsidiaries around the world. With the aim of ensuring that subsidiaries' risk management systems function and of reinforcing and increasing the efficiency of their management, in fiscal year 2016 DIC outlined four key themes to guide these efforts. This move was made in line with the Company's belief in the importance of establishing robust frameworks for the appointment of directors, the organization of corporate auditors, the operating structures underpinning subsidiaries' management and the provision of support by the parent company.

- Enhance the visibility of Group governance systems: The DIC Group's matrix-like governance organization positions products on one axis and regions on the other. Steps are being taken to clarify and set down standards for the segregation of duties and the delegation of authority to assist overseas subsidiaries in determining which of the two aspects should be given priority in making business decisions.
  Theorem Cuiding Efforts to Strengthon
- Ensure appropriate behavior by subsidiaries' boards of directors: Prerequisites for the appointment of directors to subsidiaries' boards of directors, which are responsible for supervising executives' performance of their duties, are being established, as are guidelines for board administration.
- Sensure appropriate behavior by subsidiaries' executives: Prerequisites for the appointment of executives, including leadership skills, managerial competence and awareness of compliance, are being established.
- Implement measures that help subsidiaries ensure rational front-line operations: Such measures include setting KPIs for subsidiaries that align with DIC targets, establishing criteria for the provision of support and management assistance by the parent company's functional departments and determining acceptable operating levels.

#### **Responding to New Laws and Regulations**

VOICF

Transfer price taxation is one of the principal challenges facing the DIC Group's subsidiaries. With transfer pricing, companies risk double taxation on transactions within the Group, that is, on being taxed on profits in the country of domicile and the country to which it transfers, i.e., sells, its products. As a consequence of the Base Erosion and Profit Shifting (BEPS) Project\*, effective from fiscal year 2018 DIC will be obliged to provide uniform information to local tax authorities in all of the countries in which it has operations. In response, the Company will work with the Group's overseas regional headquarters (DIC (China) Co., Ltd. and DIC Asia Pacific Pte Ltd) and Sun Chemical Corporation, to confirm and organize transaction information.

\* BEPS is the artificial reduction of taxable income through the shifting of profits to low-tax jurisdictions or other locations where there is little or no economic activity. The BEPS Project is an initiative undertaken in response to demands by G20 member countries seeking to prevent the erosion of their tax bases to plug gaps in tax rules that make BEPS possible.

Executive Officer (In charge of Finance and Accounting Division) Hiroyuki Ninomiya

Governance leverages common Group values and mechanisms to create an operating foundation that allows people on the front lines to focus on their responsibilities.

For an organization like the DIC Group, which has two-thirds of its employees overseas, the physical and psychological distance between corporate headquarters in Tokyo and bases overseas makes it difficult for everyone to feel like they are part of single global team. However, I believe that creating such a sense of solidarity is crucial.

By capitalizing on shared values and vision to promote sustainable business expansion and maximize profitability, Group companies can both make their presence felt and contribute to continued growth for the DIC Group as an attractive and admired corporate organization. This is the true objective of governance. Making certain that all employees—whether at corporate headquarters or a Group company—feel they are all on the same team and setting common Groupwide rules to promote cooperation will enable us to maximize and benefit from synergies.

We will continue working to create an operating foundation that allows leaders on the front lines at each of the Group's bases to focus on their responsibilities, without being inundated by everyday management-related minutia. I am confident that creating a work environment that inspires pride in each and every employee will help further enhance the DIC Group's appeal and drive growth.

#### Themes Guiding Efforts to Strengthen Governance at Subsidiaries

## 174 Subsidiaries and Affiliates (1) Enhance the visibility of Group governance systems

- 2) Ensure appropriate behavior by subsidiaries' boards of directors
- ③ Ensure appropriate behavior by subsidiaries' executives
- (4) Implement measures that help subsidiaries ensure rational front-line operations

## The DIC WAY

Room the DIC Group

# **>** BCM

Drawing on lessons from the Great East Japan Earthquake, the DIC Group now accounts for all risks with the potential to interrupt business continuity through BCM. These risks include natural disasters such as large earthquakes and floods; influenza and other pandemics; explosions, fires, leaks and other facility accidents; and major corporate scandals. The Group comprehensively estimates the probability of each risk and its impact on management, prioritizing response measures for more significant risks.

In Japan, which is currently experiencing an active period in terms of volcanic and seismic activity, the Group deploys ongoing natural disaster response measures. These include maintaining headquarters' functions and task force framework, support measures for disaster-stricken areas, and producing and renewing BCPs for each key product. The Group facilitates and maintains a system to maintain business continuity through training drills. These encompass drills for safety confirmation, emergency radio warnings, comprehensive disasters, disaster map exercises and BCP.

# **BCM** in Fiscal Year 2016

Initiatives in fiscal year 2016 included renewing BCPs. This involved providing training (classes and theoretical training) for all product division BCP officers and preparing updated plans. The goals here were to ensure that BCP officers share a common understanding of business risks and to reinforce recognition of the need to address business continuity as an inherent aspect of everyday operations by predicting potential crises and making preparations, thereby enabling DIC to leverage limited resources to secure supply chains and restore sites to operability in the aftermath of a major disaster.

Acting through the Responsible Care Department, DIC promoted ongoing efforts to reinforce responses to risks specific to global chemicals manufacturers, including those associated with process safety and disaster prevention, the management of chemicals substances and export controls. The Company also took steps to prevent patent disputes and strengthen competitiveness, expanding its intellectual property database to avoid the danger of violating the intellectual property rights of other companies and promoting ongoing efforts to secure intellectual property rights and the use of "black boxing" to protect for its own technologies.

# Complementary Production Capabilities

The DIC Group recognizes the need to ensure it can fulfill its supply responsibilities even in the event of damage to facilities from a major natural disaster and thus incorporates this perspective into its BCPs. One way it seeks to do so is through complementary production capabilities. For example, the Group's LC production facilities in Japan and the PRC collaborate on the implementation of BCPs, using a common emergency response manual and holding regular response simulation sessions. Group pigment production facilities have developed a framework that involves continuous cooperation to plan emergency response measures.



# **BCP** Initiatives

- Emergency response manual
- Response simulation sessions

Complementary production capabilities for LCs



# > Emergency Response Exercises and Drills

The DIC Group has developed and maintains a system designed to ensure its ability to minimize damage in the event of a disaster, as well as to ensure the smooth restoration of operations. This system includes a wide range of exercises and drills, including safety confirmation drills, emergency radio warning drills, comprehensive disaster drills, map-based simulation exercises and BCP drills.







Task force map-based simulation exercise





BCP drill and training

## **DIC Headquarters Emergency Response Pocket Book**

Approximately 1,300 employees of the parent company and various domestic Group companies work at the corporate headquarters in Tokyo. This compact booklet, which is distributed to these employees and their families, provides instructions on advance disaster preparations and details corporate headquarters' overall emergency response framework, as well as the responsibilities of individual floors and departments in an emergency situation. Space is also provided for employees and their families to provide contact information for use in the event of an emergency, while the compact size ensures portability.



## A Stakeholder's Perspective

#### The assistance of companies with strong local roots plays a key role in creating safe, secure communities.

DIC is involved in a wide range of social contribution activities. We are delighted to have their cooperation in efforts aimed at ensuring the safety and security of our community. As a member of the local neighborhood association, they assist with the annual Nihonbashi 3-Chome Nishimachi Neighborhood Association Comprehensive Disaster Drill—which is held under the guidance of the Nihonbashi Fire Station—by providing the venue and administrative support for the drill. They also support local disaster preparation efforts in other ways, including by allowing the installation of a local emergency supplies depot inside the DIC Building. Thanks to the cooperation of local companies such as DIC, our association's disaster preparation efforts continue to earn high marks. In 2016, we received a Tokyo Fire Department Superintendent–General's Award for excellence. We also received the Minister's Award, which is the top honor in the Ministry of Internal Affairs and Communications' awards recognizing community disaster prevention efforts. I am very proud of our achievement, but of course I recognize that there is always more to do. I look forward to DIC's continued growth and evolution as a company with strong local roots and to the future of this mutually beneficial relationship.











Chairperson, Nihonbashi 3-Chome Nishimachi Neighborhood Association Kiichiro Nonaga

# **walnformation Security**

# Initiatives to Ensure Information Security

## Goals and Achievements of Major Initiatives Evaluations are based on self-evaluations of current progress. Key: \*\*\* = Excellent; \*\* = Satisfactory; \* = Still needs work

Objective of initiative	Goals for fiscal year 2016	Achievements in fiscal year 2016	Evaluation	Goals for fiscal year 2017
Establish a global information security framework.	<ul> <li>Support ongoing efforts to uphold and deploy information security management configurations for the Asia–Pacific region and Greater China.</li> <li>Promote ongoing measures to achieve consistency between the Sun Chemical and DIC Group information security guidelines and management configurations and encourage application.</li> <li>Revise and enforce rules that respond to the growth of cloud computing and other new ways of sharing information.</li> </ul>	<ul> <li>The introduction of information security management guidelines was completed in Greater China, while efforts to deploy such guidelines continued in the Asia–Pacific region.</li> <li>A comparative study of the information security rules, standards and promotion systems of the Sun Chemical Group and DIC was completed.</li> <li>Common ICT-related usage and management guidelines were formulated for Japan, the Asia–Pacific region and Greater China.</li> </ul>	**	<ul> <li>Deploy common ICT-related usage and management guidelines in Japan, the Asia-Pacific region and Greater China.</li> <li>Commence the implementation of measures to reinforce information security in the Asia-Pacific region.</li> <li>Create a framework for the implementation of measures to strengthen BCPs.</li> </ul>

# **Basic Approach to Information Security**

The DIC Group has positioned information security as a key management priority and established a Basic Policy on Information Security, which is founded on its recognition that protecting information assets that belong to or are managed by the Group is essential to its ability to conduct business. In line with this policy, DIC has formulated and implemented confidential information management regulations and information management guidelines. (The regulations and guidelines were created in Japan in fiscal year 2010. Deployment in Asia and Oceania commenced in fiscal year 2015.)

The DIC Group works to ensure that directors and employees use the Group's information assets appropriately in the course of business and appropriately handle confidential information. The Group also pursues continuous improvements by conducting internal audits to confirm current issues and identify risks.



# Solution Security Security

#### Initiatives in Japan

Since fiscal year 2014, DIC has promoted revisions aimed at creating a system for responding to targeted cyber attacks and other critical risks to its information security. In fiscal year 2016, the DIC Group continued working to update rules for addressing security threats arising from cloud computing, smart devices and other emerging IT technologies. The Group will press forward with efforts to revise rules to accommodate changes in working styles and other developments attributable to the progress of digitization.

The DIC Group currently provides information security training to employees at point of hire and when promoted, which is completed by approximately 200 individuals annually. Preparations are also under way to develop an e-learning program and implement information security awareness initiatives targeting employees Groupwide.

#### Initiatives in Asia and Oceania

In fiscal year 2016, the DIC Group formulated information and communications technology (ICT) usage and management guidelines for Asia and Oceania. By promoting the deployment and firm establishment of these rules, the Group will continue working to reinforce the information security measures of DIC Group companies in these regions.

#### Initiatives in the Americas and Europe

Having recognized information security as a challenge of vital importance, the Sun Chemical Group, which oversees operations in the Americas and Europe, works continuously to ensure business continuity and mitigate risks to its information systems and the confidentiality, integrity and accessibility of its data. In fiscal year 2016, the Sun Chemical Group took steps to expand its existing information security system and made infrastructure investments aimed at facilitating prompt post-disaster recovery. The group also modified its information security policy and countermeasures to facilitate effective responses to ever-more extensive and sophisticated information security risks.

# Safeguarding Information Security Environments in Asia and Oceania

As part of a larger effort to advance and strengthen its global information security capabilities, the DIC Group has developed an overall plan for introducing a security system for Asia and Oceania based on a unified infrastructure. In fiscal year 2017, the Group will begin building country-specific management systems with the aim of combating, among others, computer viruses and software vulnerabilities.

VOICE IT Manager, PT. DIC Graphics and Head of the IT Help Desk for Southeast Asia and Oceania Revi Septiana Rachman

We are working to ensure and enhance information security in Southeast Asia and Oceania.



In addition to being in charge of the IT help desk for Southeast Asia and Oceania, I am involved in efforts to devise and firmly establish various information security measures across the region.

Ensuring internal information security is critical to the successful expansion of a company's operations. For this reason, we must devote considerable attention to creating a framework for protecting the various types of data we handle. Accordingly, we are promoting regional infrastructure improvements with the aim of guaranteeing a superior level of data security. We are also working to deploy and firmly establish regional ICT usage and management guidelines to further improve the security of our information.

# Environment, Safety and Health (ESH)

# Toward the Achievement of a Sustainable Society

SDGs Goals 3, 6, 7, 12, 13, 14 and 15

# Promoting Responsible Care

# **Basic Philosophy**

As a company that manufactures and sells chemical substances, DIC sets standardized safety regulations for ESH initiatives. The Company is working to exceed regulatory standards and fully disclose results. Annual measures augment its core policy.

# > Initiatives to Date

Having established its Principle and Policy for the Environment, Safety and Health in 1992, in 1995 DIC pledged to implement the precepts of Responsible Care. Since reaffirming its support for Responsible Care management in January 2006 by signing the CEO's Declaration of Support for the Responsible Care Global Charter, the Company has promoted constant improvements. In 2014, DIC amended its Principle and Policy for the Environment, Safety and Health and renamed it the Policy for the Environment, Safety and Health. The name was subsequently revised to the Environment, Safety and Health Policy.



DIC is a signatory to the International Council of Chemical Associations' Responsible Care Global Charter

# Environment, Safety and Health Policy

As a responsible corporate citizen and as a company that manufactures and sells chemical substances, DIC recognizes that care for the environment, safety and health is fundamental to the management of the Company. DIC is committed to the concept of sustainable development in all aspects of its businesses and contributes to the global environment, including biodiversity, by creating environmentally sound products and technologies.

- We take responsibility for the environmental, safety and health implications of products throughout their life cycles.
- We continuously set goals and targets for environmental, safety and health improvements.
- We comply strictly with laws, regulations and agreements relative to the environment, safety and health. For countries lacking such laws, we prioritize safe operations and protection of the environment.
- We systematically provide education and training on the environment, safety and health.
- S We prepare systems and audit internally to benefit the environment, safety and health.

We disclose these policies internally and externally and ask that all DIC Group companies observe them. The abovementioned "safety" also encompasses security and disaster prevention.

# > Focus on Product Stewardship

The DIC Group views product stewardship as essential to the promotion of Responsible Care. Product stewardship is a philosophy that emphasizes assessing product-specific ESH risks and sharing findings, together with information on appropriate handling, with stakeholders, with the aim of reducing the ESH impact of products over their entire life cycle—i.e., from the development of chemical substances through to procurement, production, transport, sale, use and disposal or recycling.

# Applying the PDCA Cycle to Eight Responsible Care Codes

The DIC Group manages its Responsible Care initiatives in a uniform manner using a management system comprising eight codes, six of which are mandated by the Japan Responsible Care Council (the first six codes listed) and two of which were devised internally (the seventh and eighth codes listed). In undertaking these initiatives, DIC and DIC Group companies leverage the Group's ISO 14001-certifed environmental management system. In addition to using these two systems, certain overseas Group companies are also working to secure ISO certification for their occupational health and safety management systems through ongoing efforts to enhance their Responsible Care capabilities.



#### Annual Activity Plans

The DIC Group formulates annual Responsible Care activity plans, translating them into English and Chinese. Based on its activity plans for fiscal year 2016, the Group sought to ensure that Group companies operating in each region developed their own specific plans, encouraging them to promote Responsible Care initiatives and contribute to an environment-friendly society through its manufacturing activities.

#### Fiscal Year 2016 Activity Plans

In fiscal year 2016, the DIC Group engaged in Responsible Care initiatives based on the following activity plans.

0 (	Occupational safety and health/disaster prevention
l r	n line with the DIC Group's fundamental objective, which remains the achievement of an accident-free workplace, set regional targets for reducing the incidence of occupational accidents in fiscal year 2016.
2	Environmental preservation
l i	In line with the DIC Group's goal of reducing its impact on the environment, set regional targets for lowering environmental impact and implement measures to facilitate the achievement thereof.
31	Logistics safety
F	Promote the provision of information pertinent to the safe transportation of chemical substances.
	Product stewardship
F	Promote the provision of information to stakeholders regarding the appropriate handling of products over their entire life cycles.
5	Communication with society
F	Report on the results of the DIC Group's Responsible Care activities via the DIC Report.
3	Management system
ľ	Make use of the PDCA cycle in promoting Responsible Care activities and foster human resources in areas pertinent to ESH.
	Compliance
٦	The DIC Group complies with ESH-related laws, regulations, standards and agreements.

#### Framework for Promoting Responsible Care

Each year, the DIC Group defines priority issues to address and uses the PDCA cycle in voluntary initiatives at the Group company, plant and research laboratory levels. The Responsible Care Department provides support for these initiatives to advance their progress and conducts regular audits to ensure compliance and improve safety and environmental performance.

#### Framework for Promoting Responsible Care



ESH

Responsible Care implementation framework

#### Support for Group Company Initiatives

The Responsible Care Department provides wide-ranging support to domestic and overseas Group companies (a total of 51 sites), regardless of size, with the goal of enhancing Responsible Care initiatives Groupwide.

# Initiatives in Fiscal Year 2016

#### Support for Overseas Group Companies

The DIC Group is working to rebuild its framework for supporting the efforts of Group companies overseas to promote ESH initiatives in a flexible, autonomous manner appropriate for each country and territory.

In the Asia–Pacific region, the Group established country heads (individuals in charge of Responsible Care in individual countries), under the supervision of the regional ESH officer, and in October 2016 held a meeting of regional country heads in Singapore. Participants in this meeting included the region's three country heads, ESH officer, the managing director of DIC Asia Pacific and 13 Responsible Care Department employees, who exchanged views on the region's ESH policy, activity plans, targets/challenges and energy-saving investment plans for fiscal year 2017. In December 2016, a country-specific meeting was held in Indonesia, which was attended by representatives of local Group companies and sites and the Indonesia country head, to discuss policies, targets and challenges going forward.

Steps were also taken to strengthen the ESH framework in Greater China. This included dispatching the parent company's ESH manager to serve as regional ESH director and the assignment of ESH coordinators to oversee efforts in the south and the east of the PRC. Regional Responsible Care managers and ESH coordinators for the south and the east of the PRC were also invited to the DIC Group's corporate headquarters in Tokyo for training that included plant tours, among others. In November 2016, Nantong DIC Color Co., Ltd., held an ESH and energy conservation conference for a group of 52 individuals, including Group company top executives, plant general managers, regional ESH officers for Greater China and the Asia–Pacific region, and pertinent directors and Responsible Care Department specialists from corporate headquarters.



ESH and energy conservation conference for Greater China and the Asia-Pacific region (Asia-Pacific region)



Framework for promoting ESH in the Asia–Pacific region



## Our aim is to fortify the framework for promoting ESH in the PRC.



In the PRC, steps have been taken to tighten its environmental laws, regulations and standards, which are now similar in level with most advanced economies. Some standards are even stricter that those in Japan! This, together with the stringent application of safety standards since the 2015 Tianjin explosions, have contributed to increasingly harsh operating conditions for manufacturers. We are working to rebuild the DIC Group's framework for promoting safety and environmental measures in the PRC by, among others, appointing chemical substance managers to the ESH team and assigning ESH coordinators to oversee efforts in the south and east of the country.

In addition, we continue to provide training regarding the handling of hazardous chemical substances to ensure awareness of current laws and regulations and to boost know-how. We also produced a Chinese-language version of *Principles of Safe Conduct* for workplace reading circles. *Principles of Safe Conduct* is a crucial component of our program to eliminate occupational accidents, and we provide support to employees in a variety of way until these principles become second nature.

Regional Manufacturing Director Gooi Kee Mein and Regional Manufacturing and ESH Manager, DIC (Malaysia) Sdn. Bhd. Chua Sin Wee

We have created a management system for the Asia–Pacific region.

The DIC Group in the Asia–Pacific region comprises 18 companies in 11 countries. In addition to the diverse customs and languages across the region, a key challenge for us from an operations perspective is differences in awareness regarding occupational safety. To address these issues, it was crucial for us to establish common occupational safety standards and ensure the efficient implementation thereof at all regional Group companies.

We have also adopted OHSAS 18001, the internationally accepted standard for occupational health and safety management systems, and have begun providing encouragement and support for companies in the region seeking to implement the standard, which a total of 12 companies have done to date. In fiscal year 2017, we will assist the efforts of DIC (Vietnam) Co., Ltd., and DIC Philippines, Inc., to earn full certification under OHSAS 18001.

#### Support for Group Companies in Japan

Calls are increasing for companies in Japan to further reinforce their frameworks for managing employee health and preventing occupational accidents. In fiscal year 2016, DIC and DIC Graphics introduced GL conferences, gatherings of ESH officers at principal production facilities across the country, dubbed "group leaders," or GLs. GL conferences were held five times during fiscal year 2016, with Responsible Care Department specialists also in attendance, with the aim of creating standards, among others, and exploring improvements to shared challenges.

#### Information Disclosure

The DIC Group strives to increase the transparency of its activities through the active disclosure of information and at the same time promotes dialogue with stakeholders by, among others, providing safety- and environment-related data through Group websites, the DIC Report and other media. The Group also undertakes initiatives to engage with society, including holding community meetings.

# **ESH Audits**

## **Basic Approach**

Responsible Care Department specialists with expertise, experience and auditing capabilities regularly collaborate with executive officers to audit Responsible Care initiatives at Group companies. DIC's president and CEO and its executive vice president also take part in ESH audits at numerous sites each year to enhance Responsible Care performance across the DIC Group.

Overseas, Responsible Care Department specialists and regional ESH officers assess the progress of efforts at production sites and work together to enhance the effectiveness of Responsible Care initiatives.



ESH audit conducted by DIC's president and CEO

# Audits in Fiscal Year 2016

In Japan, Responsible Care Department specialists have audited the Responsible Care efforts of domestic consolidated subsidiaries since fiscal year 2014 to verify efforts and support improvement activities. In fiscal year 2016, audits were conducted at DIC's nine principal sites and four sites belonging to DIC Graphics. In addition to regular audits, the Group assessed the progress of remedial measures at 13 domestic Group sites in response to issues identified in fiscal year 2015 audits.

The Group promotes similar efforts overseas, with audits becoming more stringent every year. In fiscal year 2016, the Group conducted inspections to determine the status of management systems, as well as Responsible Care audits in three areas (environment, safety and health) at 17 companies in Greater China (17 sites), three companies in the Republic of Korea (ROK) (three sites), and 16 companies in the Asia–Pacific region (21 sites). These audits used self-assessment checklists to confirm that each unit is progressing steadily through application of the PCDA cycle. Audits in Greater China were improved to include a revised self-assessment checklist comprising approximately 200 questions.

In fiscal year 2016, the Group reported two violations of environmental regulations overseas\*. Prompt steps were taken to make improvements to prevent reocurrence.

	安全·健康·环境评价实施的自主点检表				
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日間?	大体上配合了安全卫生管理所需要的人手相归算。管理者以及安全-环境-健康担当者以力安 全卫生上必要的事识大体上得到实施	э			
	起签了安全·环境·健康管理方面的人手和预算、但只有管理者等部分人员可以使用。	2			
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	朱制定安全-环境-健康管理所需要的人手和回算相关的计划。	0			

More detailed self-assessment checklist (Greater China)

#### **Outline of ESH Audits for Fiscal Year 2016**





Initiative at DIC Graphics Chia Lung Corp. (Taiwan)

# Occupational Safety and Health, Security and Disaster Prevention

Goals and Achievements of Major Initiatives Evaluations are based on self-evaluations of current progress. Key: \*\*\* = Excellent; \*\* = Satisfactory; \* = Still needs work

Objectives of initiatives	Goals for fiscal year 2016	Achievements in fiscal year 2016	Evaluation	Goals for fiscal year 2017
Ensure occupational safety and health.	Introduce and promote chemical substance risk assessments.	Proprietary guidelines for chemical substance risk assessments were formu- lated and presentations on the guidelines were held.	**	<ul> <li>Implement chemical substance risk assessments.</li> </ul>
Promote ESH-related training.	<ul> <li>Continue to conduct hands-on safety training.</li> <li>Implement mobile hands-on safety training using new equipment.</li> <li>Promote rank-specific training.</li> </ul>	<ul> <li>Hands-on safety training continued and mobile hands-on safety training using new equipment was implemented.</li> <li>Tailored training programs were implemented for new employees, newly promoted employ- ees and employees selected for overseas transfer, among others.</li> </ul>	***	<ul> <li>Continue to conduct hands-on safety training.</li> <li>Implement mobile hands-on safety training using new equipment.</li> <li>Promote rank-specific training.</li> <li>Introduce e-learning programs.</li> </ul>
Promote the implementation of measures for and the sharing of ESH-related information.	<ul> <li>Continue the activities of the Safe Corporate Climate Cultivation Working Groups.</li> <li>Share and make use of information on industrial accidents within the DIC Group.</li> </ul>	<ul> <li>Safe Corporate Climate Cultivation Working Groups explored the idea of bringing the development of educational materials for production supervisors in-house and shared safety-related information.</li> <li>GL conferences (for ESH officers) were established.</li> <li>The causes of industrial accidents were analyzed and information provided and shared in a timely manner.</li> </ul>	**	<ul> <li>Continue the activities of the GL conferences, Safe Corporate Climate Cultivation Working Groups and other such groups.</li> <li>Share and make use of information on industrial accidents that have occurred at DIC Group sites.</li> </ul>
Ensure the safe management of chemical substances during transport.	<ul> <li>Formulate measures for preventing problems during transport and deploy across the DIC Group; promote training.</li> <li>Promote safety management in the transport of chemical substances.</li> </ul>	<ul> <li>In Japan, information was provided through the creation of Yellow Cards to transport personnel.</li> <li>No significant problems related to the transport of chemical substances were reported.</li> </ul>	***	<ul> <li>Formulate measures for preventing problems during transport and deploy across the DIC Group; promote training.</li> <li>Implement corrective actions by periodically ascertaining the situation on the logistics front lines.</li> </ul>
Encourage the safety and environ- mental management initiatives of Group companies in Greater China and the Asia–Pacific region.	<ul> <li>Introduce and promote risk assessments in Greater China and the Asia–Pacific region.</li> <li>Continue ESH audits and support better self-management.</li> </ul>	<ul> <li>The safety and environmental management frameworks in Greater China and the Asia–Pacific region were restructured.</li> <li>Risk assessments were introduced and promoted in Greater China and the Asia–Pacific region and the status of implementation confirmed through ESH audits. Training was provided at six Group companies in the PRC.</li> <li>ESH audits were conducted at 36 companies (41 sites).</li> </ul>	***	<ul> <li>Create working groups/conferences.</li> <li>Continue to promote risk assessments in Greater China and the Asia–Pacific region.</li> <li>Continue to implement ESH audits and support efforts to enhance independent management.</li> <li>Expand facilities for hands-on safety training.</li> </ul>
Manage safety and environmental data.	Continue to collect safety and environ- mental data from Group companies in Greater China and the Asia-Pacific region and from the Sun Chemical Group.	Safety data was collected monthly and environmental data annually from Group companies in Greater China and the Asia–Pacific region and from the Sun Chemical Group.	**	Expand the collection of safety and environmental data from Group companies in Greater China and the Asia–Pacific region and from the Sun Chemical Group.

# > Occupational Safety and Health

#### Prioritizing Safe Operations

The DIC Group recognizes that operational safety is fundamental to its operations and is also a core component of Responsible Care. Accordingly, the Company undertakes occupational safety and health, security and disaster prevention measures to foster a "safety first" philosophy Groupwide and in the mind of every employee.

Because its manufacturing operations span diverse fields, the DIC Group has numerous production processes that use hazardous and toxic materials and rotating devices, including ones that do not involve chemical reactions. Any accident involving such materials or devices has the potential to significantly impact society in general and damage the health of the Group and partner company employees and local residents.

With the aim of preventing such accidents, the DIC Group places a high priority on reducing risks in the workplace by enhancing awareness of *Principles of Safe Conduct* and training safety personnel. The Group strives to enhance safety through efforts to reinforce its safety infrastructure and create a safety-oriented corporate culture.

#### **Basic Approach**

As a responsible member of society and a company that manufactures and sells chemical substances, the DIC Group recognizes that proper consideration for ESH is fundamental to its operations and works to incorporate this awareness into all of its business activities. Guided by this philosophy, the DIC Group analyzes accidents and communicates information thus derived, based on which it undertakes risk assessment with the aim of ensuring occupational safety and health.

# Principal Initiatives in Fiscal Year 2016

## 1 Making Regional Data Visible through Monthly Reports

The DIC Group conducts its diverse businesses in accordance with a wide range of national and regional legal systems, working environments and practices. The risk of accidents and disasters varies from one industry to another because of differences in the facilities, machinery and raw materials used. For Group companies to work as one to improve occupational safety and health, it is therefore crucial to establish appropriate benchmarks for each region (Japan, Greater China, the Asia–Pacific region, and the Americas and Europe).

In fiscal year 2016, DIC defined accidents, disasters and reporting procedures for each region, as well as gathered and shared statistical information related to occupational safety, including employee numbers, working hours, number of accidents leading to workdays lost, number of accidents not leading to workdays lost, number of accidents involving fires/explosions, workdays lost, workdays lost before restart of operations, occupational accident frequency

rate, occupational accident severity rate, work days lost per thousand employees and workdays lost per million work hours. This approach made it possible to objectively compare the operational safety of individual Group companies, establish more precise targets and facilitate improvement programs.

In fiscal year 2015, DIC established a system for aggregating monthly occupational safety and health data for each company in Greater China and the Asia–Pacific region as a monthly report. Domestic Group companies already had such a setup in place. This made it easier to more swiftly identify and compare working hours, the numbers of accidents leading to workdays lost, occupational accident frequency rates and other monthly data for these regions, thereby further streamlining Groupwide management.

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Monthly report

#### 2 Reducing Risks

By understanding potential risks in production processes, facilities and devices, and the hazards of chemical substances, the DIC Group systematically prepares initiatives to prevent accidents and occupational injuries. The Group also creates risk assessment guidelines when deploying new or modified equipment or changing production processes to continue risk reduction activities.

With the aim of reducing risks associated with chemical substances in Japan, since fiscal year 2015 the DIC Group has created a framework to facilitate the methodical implementation of risk assessments in line with the policy set forth by the Ministry of Health, Labor and Welfare. Specifically, the Group has formulated proprietary guidelines, including assessment procedures, and is considering measures to assess hazards and toxicity and lower risks associated with chemicals set forth in Japan's Poisonous and Deleterious Substances Control Act, including modifying and improving practices for handling such substances. To facilitate the smooth implementation of the guidelines, in fiscal year 2016 the Group held seven lectures at 12 DIC Group companies in Japan, which were attended by a total of 149 employees. Participants have been tasked with promoting a three-year plan for reducing risks associated with chemical substances by propagating assessment know-how and procedures at their respective workplaces.



Lecture on the assessment of risks associated with chemical substances

#### **3** *Promoting E-Learning-Based Training for Employees*

To enhance its ESH and disaster prevention capabilities, the DIC Group recognizes the importance of ensuring that all of its employees gain a broad understanding of chemical substances, production processes, and pertinent law and regulations. In fiscal year 2016, the Group introduced an e-learning program on a trial basis to verify its value and, having done so, in fiscal year 2017 the Group began deploying the program at successive Group companies in Japan. The Group also began offering an e-learning program in the PRC in fiscal year 2016, capitalizing on a highly developed smartphone-based e-learning environment and active national and regional government endorsement, and intends to gradually introduce and expand availability once it has verified the program's usefulness.

4 of the DIC Group

# VOICE Regional ESH Officer Takeshi Hosomi

## We are using e-learning to enhance the know-how and skills of employees.

In fiscal year 2016, we promoted the creation of opportunities and educational materials to facilitate systematic training in key aspects of ESH, which is critical to the promotion of Responsible Care, in Japan. Specifically, we structured training around 16 laws and regulations pertinent to the operation of production facilities, including the Fire Service Act, the Air Pollution Control Law and the High Pressure Gas Safety Act, and verified the appropriateness of educational materials from the perspective of Responsible Care Department specialists, plant ESH officers and production departments. In the PRC, we developed an e-learning program for safety management training targeting ESH officers. Going forward, we will select educational materials appropriate for different trainees with the aim of enhancing the know-how and skills of employees.

#### 4 Training Skilled Safety Personnel to Predict Risks

The DIC Group regularly trains skilled safety personnel on how to handle chemical substances, using materials such as its *Principles of Safe Conduct* and *Environment and Safety Guidelines for the R&D Department*, as well as safety data sheets (SDSs) and its Occupational Accident Case Studies database. In recent years, the Group has focused especially on a technique called Kiken Yochi Training (KYT) ("hazard prediction training") and on hands-on safety training for employees of Group companies worldwide.

The Group also undertakes similar initiatives at production sites in Greater China and the Asia–Pacific region. In the ROK and Malaysia, local employees have voluntarily translated *Principles of Safe Conduct*. Headquarters has already translated *Principles of Safe Conduct* into English and Chinese, using it throughout Greater China and the Asia–Pacific region.

KYT is a constructive way to further increase safety awareness. Domestic DIC Group companies use the technique extensively, and the Group is working to accelerate its deployment in Greater China and the Asia–Pacific region.

#### 5 Advancing Hands-On Safety Training

Hands-on safety training is an effective alternative to classroom-based learning that uses actual equipment to simulate potential risks in the workplace, thereby heightening employees' awareness of the importance of proper safety. In Japan, the DIC Group initiated a full-fledged hands-on safety training program in 2012 and since then has offered training that bases simulations on previous accidents, including those involving being caught in machinery, electrical discharges or fires from static electricity.

In 2014, the Group opened the Saitama Hands-On Safety Training Center, a facility boasting equipment that allows the simulation of an array of accidents, with the goal of fostering skilled safety personnel by incorporating training in new employee and rank-specific training programs. DIC's Chiba, Sakai, Hokuriku, Saitama, Kashima and other plants have established their own hands-on safety training equipment and curricula to further embed safety into the DIC Group culture.

In light of frequent accidents at domestic production facilities that involved employees with fewer than three years of experience, the DIC Group included safety training and KYT in the training curricula for new employees in fiscal year 2014. In fiscal year 2015, the Group downsized six types of hands-on equipment for a mobile initiative and raised the standards of lecturers. In fiscal year 2016, the Group loaned 20 pieces of hands-on training equipment for a mobile initiative encompassing five sites.

Overseas Group companies are also deploying hands-on safety training equipment. Installations in Greater China have included those at Nantong DIC Color, a manufacturer of printing inks and organic pigments; DIC Graphics (Guangzhou) Ltd., which manufactures printing inks; and Changzhou Huari New Material Co., Ltd., a synthetic resin manufacturer, in the PRC, and at Taiwanese printing inks manufacturer DIC Graphics Chia Lung. In the Asia–Pacific region, there have been installations at DIC Compounds (Malaysia) Sdn. Bhd.; and PT DIC ASTRA Chemicals in Indonesia, a manufacturer of printing inks. As well as providing regular hands-on safety training for local employees, these sites offer education for safety instructors. In fiscal year 2016, the cumulative number of participants in hands-on safety training across the global DIC Group surpassed 10,000.



Downsized equipment that simulates standing on shaking ground used in mobile hands-on safety training



KYT for new employees



Experiencing being caught in a chucking apparatus

## Number of Hands-On Safety Training Participants (Fiscal Year 2016)

	DIC Group (Japan)	DIC Group (overseas) (Greater China: 4 companies; Asia-Pacific region: 2 companies)	Total
FY2016	252	504	756
Cumulative total (FY2012–2016)	7,990	2,352	10,342

## Status of Occupational Accidents

The DIC Group promotes a variety of initiatives aimed at eliminating occupational accidents. In fiscal year 2016, the number of occupational accidents resulting in workdays lost across the DIC Group were down from the fiscal year 2015 level. Looking ahead, the Group will continue working to analyze the causes of occupational accidents resulting in workdays lost that have occurred to date and to reflect its findings in concrete improvements with the goal of preventing the further occurrence of such accidents.

## Occupational Accidents Resulting in Workdays Lost

	DIC			DIC C	Group (J	apan)	DIC Group (Global)			
	2014	2015	2016	2014	2015	2016	2014	2015	2016	
Number of accidents resulting in workdays lost	0	1	3	4	5	5	80	88	71	
Frequency rate	0.000	0.181	0.541	0.429	0.556	0.548	2.133	2.375	1.893	
Severity rate	0.000	0.005	0.012	0.006	0.018	0.026	-	-	-	
TRIR*	1.29	1.27	2.35	2.25	2.11	3.07	4.37	4.32	3.84	

\* Total recorded incident rate (TRIR) is calculated as (Occupational accidents + Occupational accidents resulting in workdays lost) / 1,000,000 hours worked



Frequency rate: This expresses the frequency of accidents resulting in lost time in a fiscal year, calculated as the number of deaths or injuries per million work hours.

Fraguanav rata —	Number of occupational deaths or injuries		
riequency rate —	Total work hours	x 1,000,000	

A frequency rate of 1.0 means one occupational accident resulting in workdays lost in one year at a site with 500 people.

Severity Rate



Severity rate: This expresses the number of workdays lost due to occupational accidents per 1,000 work hours.

Sovority rato —	Total number of workdays lost	
Sevenity rate -	Total work hours	- x 1,000

A severity rate of 0.1 means 100 workdays lost in one year at a site with 500 people.

## Safe Corporate Climate Cultivation Working Groups

Safe Corporate Climate Cultivation Working Groups comprise personnel in charge of safety at plants belonging to DIC and subsidiary DIC Graphics. These groups have been active since fiscal year 2011. Members meet regularly to discuss and exchange proposals regarding safety policies and measures.

- Fiscal year 2012: Working groups presented recommendations on safety policies and produced warning stickers to enhance awareness of workplace hazards.
- Fiscal year 2013: Working groups prepared safety posters featuring the president and CEO and started reading out key passages from *Principles of Safe Conduct* in workplaces with the aim of making the practices therein routine.
- Fiscal year 2014: Working groups prepared an illustrated version of *Principles of Safe Conduct* for reading out in workplaces.
- Fiscal year 2015: Working groups edited Principles of Safe Conduct into a tear-off calendar version for distribution at all
  - workplaces. The calendar version was translated into English and Chinese.
- Fiscal year 2016: Working groups in the PRC began reading out key passages from *Principles of Safe Conduct* to further strengthen the DIC Group's culture of safety.

## 💶 💶 安全基本動作





Easic Safety Action



Pages from the illustrated version of *Principles of Safe Conduct* for workplace reading circles (available in Japanese, English and Chinese)



Qingdao DIC Finechemicals' employees reading out key passages

## TOPICS

## DIC Wins Special Jury Award in the JCIA's 2016 Responsible Care Awards

In May 2016, DIC was presented with a Special Jury Award from the Japan Chemical Industry Association (JCIA) as part of the 10th JCIA Responsible Care Award program. The award was in recognition of the role played by DIC's Safe Corporate Climate Cultivation Working Groups in reducing the incidence of occupational accidents. The JCIA acknowledges sites, divisions, groups and individuals for outstanding initiatives and contributions under this annual program with the aim of promoting and expanding Responsible Care.

## DIC Employee Earns Green Cross Award from JISHA

Tetsuya Morita, group leader of the Komaki Plant's Safety and Environment Group, was awarded the Green Cross Award from the Japan Industrial Safety and Health Association (JISHA). The award was presented at a ceremony in October 2016. The Green Cross Award is presented to individuals who have made notable contributions over long periods to the improvement of industrial safety or the promotion of occupational safety and health. Mr. Morita has been involved in occupational safety and health, security and disaster prevention for the past 16 years. In addition to promoting safety initiatives involving full employee participation, Mr. Morita has played a key role in the creation and implementation of dedicated risk assessment guidelines and promoting hands-on safety training at the Komaki Plant. Mr. Morita was nominated for this award by the JCIA.

#### DIC Graphics Chia Lung Receives 2016 Taiwan National Occupational Health and Safety Award

Taiwan-based DIC Group company DIC Graphics Chia Lung received a special occupational safety and health award for traditional industries at the 2016 Taiwan National Occupational Health and Safety Awards, which were given out on November 8, 2016. This award recognizes companies that have invested in occupational safety and health through, among others, efforts to prevent fires/ explosions, improve production environments and enhance working environments, as well as to create a safety-oriented corporate culture. DIC Graphics Chia Lung was the only private-sector company to earn this award in fiscal year 2016. The company looks forward to contributing further to the improvement of occupational safety and health.



DIC Graphics Chia Lung representative accepting award at the 2016 Taiwan National Occupational Health and Safety Awards



Manager in charge of safety, Saitama Plant Toshiyuki Tanaka



Group leader, Safety and Environment Group, Komaki Plant Tetsuya Morita



Special occupational safety and health award

ESH

#### Occupational Health

The DIC Group handles a broad range of chemicals, including specified chemical substances and organic solvents. To safeguard the health of employees handling these chemicals, the Group regularly conducts health checkups and environmental measurements, and modifies and improves working conditions as needed. Industrial physicians, health supervisors and other experts inspect workplaces to manage employee health.

#### Electronic Storage of Employee Work and Health Records

Japanese laws and regulations mandate that companies handling specified chemical substances with the potential to cause serious health problems as a result of long-term exposure must maintain appropriate working environments as well as store work and health check records for 30 years. Companies must also maintain storage space for these records to minimize the risk of paper-based documents going astray or becoming lost.

In fiscal year 2014, the domestic DIC Group built a centralized data management system comprising an information network linking each work site, facilitating the electronic recording and storage of data for each employee and the review of information by supervisors and administrators. This approach ensures consistent recording formats at each site and helps eliminate the risk of records going astray while resolving the issue of storage space.

# Security and Disaster Prevention

## Basic Approach and Organization

Any fire, explosion or leak of hazardous substances from a chemical plant could have a tremendous impact on local residents and the rest of the community and damage the health of employees, including those of partner companies. In addition to establishing a security management system to prevent such accidents, the DIC Group operates and maintains its facilities in line with pertinent laws and regulations. The Group regularly conducts emergency drills and has earthquake and other response measures in place.

DIC also undertakes risk assessments to ensure its ability to construct safe production facilities. In 2013, the DIC Group formulated the DIC Process Risk Management (PRM) Guidelines\*, which consist of four assessment techniques and implementation timetables for each. The Group uses these tools to conduct regular risk assessments at each of its sites. To aid in effective BCP, an essential component of risk management, in fiscal year 2016 the Group identified priority risks and implemented emergency response drills.



Conceptual Illustration of DIC's Safety Infrastructure

\* The DIC PRM Guidelines outline timetables and implementation frameworks for assessing the handling of chemical substances, production processes, production formulas, machinery and work practices with the aim of comprehensively identifying and steadily reducing risks associated with production and R&D processes.

#### Facility Safety Assessment

#### Assessment Procedures

DIC Group production facilities have an array of equipment, ranging from units where chemical reactions are conducted to machine presses and other processing equipment. When modifying processes or upgrading/replacing equipment, the Group assesses safety at every stage, from process design and construction through to operation, maintenance and final disposal, in line with risk assessment guidelines for reaction processes and facilities, to ensure higher safety levels for new processes and facilities. In fiscal year 2015, DIC revised risk assessment guidelines for machinery and equipment and prepared educational materials to prevent static electricity accidents.

#### **2** Accident and Disaster Analysis and Timely Information

DIC collects and compiles information on internal and external accidents, disasters and problems into its Occupational Accident Case Studies and Accident Case Studies databases. After identifying the causes of accidents or problems and establishing points to be checked, the Company incorporates database information into safety education for DIC and DIC Group companies in Japan and overseas.

## **3** *Initiatives to Enhance Safety Competency*

A company's safety competency can be defined as its ability to maintain safety levels at its various sites. As a means of objectively evaluating and enhancing its safety competency, in fiscal year 2013 DIC introduced an assessment system that encompasses questions about safety infrastructure (technical considerations) and the Company's culture of safety (operation and management of organizational culture). This system was developed by the Japan Society for Safety Engineering (JSSE) as a common benchmark for engineers in the petrochemicals industry and is currently used by the 21 major corporations in Japan that established the Safety Competency Enhancement Center.

To promote the greater use of safety assessment systems, in fiscal year 2015 the Safety Competency Enhancement Center formulated a system for evaluating processing sites and a prioritized version of the system to streamline evaluations. Because the DIC Group has processing sites in Japan, DIC participated in the former. Going forward, DIC plans to broaden the implementation of safety assessments beyond sites with reaction facilities to include processing sites. In fiscal year 2016, the Company resolved to implement Safety Competency Enhancement Center inspections at two sites in fiscal year 2017.

#### Emergency Response Drills

DIC augments daily security patrols and periodic equipment checks with regular emergency response drills, especially at production sites in Japan and overseas, to prepare for emergencies.



Comprehensive fire drill at Kashima Plant



Comprehensive fire drill at Chiba Plant

# Reducing Discharge of Chemical Substances

Goals and Achievements of Major Initiatives Evaluations are based on self-evaluations of current progress. Key: \*\*\* = Excellent; \*\* = Satisfactory; \* = Still needs work

Objectives of initiatives	Goals for fiscal year 2016	Achievements in fiscal year 2016	Evaluation	Goals for fiscal year 2017
Reduce VOC emissions into the air.	<ul> <li>Reduce VOC emissions into the air.</li> <li>Establish reduction targets for individual domestic sites and promote related initiatives (cumulative total of targets for domestic production facilities: 379 metric tonnes (-1.6% from fiscal year 2015)).</li> </ul>	DIC Group (Japan): Total emissions of 385 metric tonnes (+1.0% from fiscal year 2015).	*	<ul> <li>Reduce VOC emissions into the air.</li> <li>Establish reduction targets for individual domestic sites and promote related initiatives (cumulative total of targets for domestic production facilities: 376 metric tonnes (-2.3% from fiscal year 2016)).</li> </ul>
Control emissions of chemical substances (Reduce emissions of 462 PRTR*1-designated substances and 89 chemical substances and one substance group targeted by JCIA*2 for voluntary control).	DIC Group (Japan): Total emissions of 388 metric tonnes (-1.6% from fiscal year 2015).	DIC Group (Japan): Total emissions of 397 metric tonnes (+1.0% from fiscal year 2015).	*	PRTR-designated substances: Establish reduction targets for individual domestic sites and promote related initiatives (cumulative total of targets for domestic production facilities: 399 metric tonnes (+0.5% from fiscal year 2016)).

\*1 The PRTR is a scheme in Japan for assessing, aggregating and disseminating data on the sources, amounts released into the environment and amounts transferred off-site from industrial establishments via waste products, of 462 designated chemical substances.
\*2 The JCIA is a general incorporated association. As one of Japan's major industry organizations, JCIA is a member of the International Council of Chemical Associations (ICCA) and pursues the healthy development of the chemical industry with other chemical-industrial organizations around the world.

## **Basic Approach**

As chemicals companies handle a considerably greater volume and more diverse range of chemical substances than companies in other industries, they must be extremely vigilant to prevent discharges of such substances into the environment. DIC has worked to reduce emissions into the air, water and soil of substances designated under the Pollutant Release and Transfer Register (PRTR) and of substances targeted under a voluntary scheme created by the JCIA since fiscal year 2000, while other DIC Group companies in Japan have done so since fiscal year 2005.

# Principal Initiatives in Fiscal Year 2016

## Reducing VOC Emissions

Having succeeded in achieving a voluntary target-set in fiscal year 2007-for reducing emissions of VOCs into the air of 30% by fiscal year 2010 (using fiscal year 2000 as the base year) for the DIC Group in Japan, domestic Group companies continue to pursue steady annual reductions through facility improvements and emissions management.

In fiscal year 2016, emissions of VOCs into the air generated by DIC amounted to 189 metric tonnes, down 9.0% from fiscal year 2015, while those by domestic Group companies, at 385 metric tonnes, were up 1.0%. The principal factor behind this increase was malfunctioning solvent recovery equipment at one site, which resulted in a decrease in the equipment's hours of operation.

Overseas, Group companies in Greater China and the Asia-Pacific region continued to promote ongoing emissions reductions. In the PRC, in particular, the Group is updating facilities and stepping up management practices in response to the tightening of regulations governing emissions of VOCs.



DIC Group (Japan)

DIC

In fiscal year 2016, the DIC Group in Japan monitored discharges of 462 class-1 chemical substances designated under the PRTR and of 89 PRTR chemical substances (other than class-1 substances) and one substance group (chain hydrocarbons with up to 4–8 carbon atoms) targeted by the JCIA\*. During the period, DIC and domestic Group companies used 111 and 124 of these chemical substances, respectively, in amounts exceeding 1.0 metric tonne, while emissions of such substances by the DIC Group in Japan edged up 1.0%. Both DIC and DIC Group companies in Japan sought to reduce emissions of these chemical substances by reviewing cleaning processes for reaction tanks and local exhaust ventilation devices. However, solvent recovery equipment at one site malfunctioned, as a result of which overall emissions edged up 1.0%, with DIC reporting an increase of 9.0% and domestic Group companies reporting an increase of 12.0%.

\* In 2014, the JCIA reviewed PRTR-designated chemical substances and revised the number of substances on its target list from 105 to 89.

#### Number of Targeted Chemical Substances Used and/or Produced in Amounts Exceeding 1.0 Metric Tonne in Fiscal Year 2016



#### Environmental Emissions of Targeted Chemical Substances (551 Substances, Including those Designated by the PRTR, and One Substance Group) in Fiscal Year 2016

	Emissions into the air	189 metric tonnes
DIC	Emissions into water	12 metric tonnes
	Emissions into soil	0 metric tonnes
	Emissions into the air	385 metric tonnes
DIC Group (Japan)	Emissions into water	12 metric tonnes
	Emissions into soil	0 metric tonnes

# Targeted Chemical Substances for Which Emissions Exceeded 10.0 Metric Tonnes in Fiscal Year 2016

Cubatanaa	DIC	DIC Group (Japan)
Substance	Emissions into the environment	Emissions into the environment
Ethyl acetate	63 metric tonnes	124 metric tonnes
Toluene	<b>48</b> metric tonnes	<b>57</b> metric tonnes
Methyl ethyl ketone	<b>30</b> metric tonnes	58 metric tonnes
Styrene	6 metric tonnes	<b>39</b> metric tonnes
Acetone	7 metric tonnes	20 metric tonnes
Propyl alcohol	1 metric tonnes	22 metric tonnes
Butyl acetate	<b>O</b> metric tonnes	12 metric tonnes

## 2 Managing Water Resources

Usable fresh water on the earth's surface is said to account for only around 0.01% of the planet's total fresh water resources. Accordingly, finding effective ways to conserve and manage water resources is a crucial global challenge. The DIC Group withdraws fresh water (tap water and industrial water) for use in production processes and air conditioning and for drinking, among others. The Group also discharges wastewater—after purifying it in line with internal standards that exceed official standards in the countries and territories where it has operations—into rivers and other fresh water bodies. In Japan, the Central Research Laboratories, in Chiba Prefecture, recovers purified wastewater (graywater) and reuses it on-site in research, as a result of which it currently discharges no wastewater. The Group also promotes the recycling and reuse of water to reduce its impact on water resources.

In fiscal year 2016, the Group continued to promote efforts to improve production processes, share information and centralize data on fresh water withdrawn, water used and wastewater discharged. Fresh water withdrawn by the global DIC Group in fiscal year 2016 rose 1.5% from the fiscal year 2015 level, to 41,528,000 m<sup>3</sup>, comprising withdrawals by the DIC Group in Japan (including the parent company) of 30,513,000 m<sup>3</sup>, up 1.5%, and by Group companies overseas of 11,015,000 m<sup>3</sup>, an increase of 1.4%. Wastewater discharged by the global DIC Group in fiscal year 2016 amounted to 37,593,000 m<sup>3</sup>, 28.0% higher than in the previous fiscal year.

Scope of Reporting for Fresh Water Withdrawn and Wastewater Discharged

Effective from fiscal year 2016, the scope of reporting for wastewater discharged has been expanded to include the Sun Chemical Group, which oversees DIC Group operations in the Americas, Europe, the Middle East and Africa. This change was the principal reason behind the sharp increase in wastewater discharged by the global DIC Group in fiscal year 2016. Data for the Sun Chemical Group was already included in the calculation of fresh water withdrawn.



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#### **3** Soil and Groundwater Pollution Studies

Japan's Water Pollution Control Act was revised in 2012 to tighten structural standards governing equipment installed to prevent groundwater contamination caused by chemical substances. In addition to complying strictly with this Act and with the Soil Contamination Countermeasures Act, the DIC Group in Japan implements soil and groundwater surveys and countermeasures as necessary and assesses related environmental and safety risks.

#### 4 Reducing SOx, NOx and COD

Taking fiscal year 1990 as the base year, DIC Group companies in Japan have worked to reduce sulfur oxide (SOx) and nitrogen oxide (NOx) emissions—key causes of acid rain—from boilers. The Group is also working to reduce chemical oxygen demand (COD), an indicator of water quality deterioration in wastewater, thereby enhancing its water quality management.

Overseas, Group companies are also switching fuel from light oil to natural gas and replacing light oil-fired and heavy oil-fired boilers with waste wood-fired biomass boilers at sites with appropriate infrastructure.

To reduce COD, the Group is promoting the reuse of water and installing closed-loop recycling and wastewater treatment systems at its sites that purify water to a level that exceeds the legally mandated standard.

## SOx and NOx Emissions Volumes



#### 5 Complying with Regulations Governing Emissions of Dioxins

In Japan, the DIC Group monitors emissions of dioxins from waste incinerators that produce these byproducts, a group of compounds with varying toxicities. At present, the Group has six such facilities. Continuous efforts to reduce emissions levels have enabled the Group to achieve results that greatly surpass standards specified in the Law Concerning Special Measures Against Dioxins.
### Dioxin Emissions from Domestic DIC Group Incinerators

011	Scale of facility	Was	ste gas	Wastewater		
Site	(incinerating capacity)	Standard (ng-TEC/Nm <sup>3</sup> )	Emissions reported in fiscal year 2015 (ng-TEC/Nm <sup>3</sup> )	Standard (ng-TEC/Nm³)	Emissions reported in fiscal year 2016 (ng-TEC/Nm³)	
Chiba Plant (DIC)	Approx. <b>3</b> metric tonnes/hr	5.0	0.2	10	0.037	
Hokuriku Plant (DIC)	0.28 metric tonnes/hr	5.0	0.0040	10	0.00011	
DIC Interior Co., Ltd.	Approx. 0.1 metric tonnes/hr	10.0	0.019	NA	_	
Hokkaido Plant (DIC Kitanihon Polymer Co., Ltd.)	Approx. 0.2 metric tonnes/hr	10.0	0.04	NA	—	
Tohoku Plant (DIC Kitanihon Polymer Co., Ltd.)	Approx. 0.2 metric tonnes/hr	10.0	0.0027	NA	_	
Harima Plant (Seiko PMC Corporation)	Approx. <b>0.2</b> metric tonnes/hr	10.0	< 0.07	NA	_	

## **Reducing Industrial Waste**

Goals and Achievements of Major Initiatives Evaluations are based on self-evaluations of current progress. Key: \*\*\* = Excellent; \*\* = Satisfactory; \* = Still needs work

Objectives of initiatives	Goals for fiscal year 2016	Achievements in fiscal year 2016	Evaluation	Goals for fiscal year 2017
Reduce industrial waste disposed of as landfill ("zero emissions"). Reduce industrial waste generated by production facilities.	<ul> <li>Implement measures at each site with the following goals:</li> <li>Reduce industrial waste disposed of as landfill (for sites that have achieved "zero emissions," maintain that status) (cumulative total of targets for domestic production facilities: 64.2 metric tonnes (-54% from fiscal year 2015)).</li> <li>Reduce industrial waste generated by production facilities 1.0% (cumulative total of targets for domestic production facilities: 29,127 metric tonnes (up slightly from fiscal year 2015)).</li> </ul>	<ul> <li>Industrial waste disposed of as landfill</li> <li>DIC Group (Japan): 183 metric tonnes (+31% from fiscal year 2015)</li> <li>Industrial waste generated by production facilities</li> <li>DIC Group (Japan): 31,303 metric tonnes (+8% from fiscal year 2015)</li> </ul>	*	<ul> <li>Implement measures at each site with the following goal:</li> <li>Reduce industrial waste disposed of as landfill (for sites that have achieved "zero emissions," maintain that status) (cumulative total of targets for domestic production facilities: 69.9 metric tonnes (-62% from fiscal year 2016)).</li> </ul>
Promote recycling.	Promote recycling at DIC Group companies and strive to improve resource recycling.	DIC Group (Japan) resource recycling rate: 86% (-3 percent- age points from fiscal year 2015).	*	Promote recycling at DIC Group companies and strive to improve resource recycling.

### **Basic Approach**

The DIC Group aims to minimize industrial waste by recycling and reusing materials. Since fiscal year 2001, DIC has been involved in a zero emissions initiative\* aimed at reducing industrial waste disposed of as landfill. DIC has deployed zero emissions initiatives at DIC Group companies in Japan since fiscal year 2008. With the aim of expanding efforts across the global DIC Group, in fiscal year 2013 DIC began to introduce MBO at overseas Group companies. DIC subcontracts the treatment of industrial waste to be disposed of as landfill, and ensures that waste is properly treated by promoting strict compliance and on-site confirmation by designated departments at each of its production facilities.

\* Zero emissions initiatives: DIC is promoting initiatives aimed at reducing the volume of waste disposed of as landfill by 95% from the fiscal year 2000 level.

### Principal Initiatives in Fiscal Year 2016

#### Reducing Industrial Waste Disposed of as Landfill

The DIC Group works actively to reduce its disposal of industrial waste as landfill by recycling cinders, dust and sludge into, among others, roadbed materials and raw materials for cement, using thermal recycling to recover waste heat and reducing production losses by increasing yields.

### Initiatives by the DIC Group in Japan

In fiscal year 2016, the total volume of industrial waste disposed of as landfill by the DIC Group in Japan increased 31.8% from fiscal year 2015, to 183 metric tonnes. This was due principally to a temporary increase in sludge disposed of as landfill by the Tokyo Plant accompanying steps taken to optimize the facility's wastewater treatment process, which amounted to 56.0 metric tonnes, as well as a higher residue rate for intermediate industrial waste processing at the Kashima Plant. In fiscal year 2017, all DIC Group companies in Japan will step up the implementation of measures aimed at reducing the total volume of industrial waste generated by its production facilities from the fiscal year 2016 level, while at the same time promoting zero emissions initiatives.

DIC and DIC Group companies in Japan also continued working to ensure the appropriate disposal of polychlorinated biphenyls (PCBs). In addition, these companies promoted the strict management of unprocessed waste, including transformers, capacitors and stabilizers, through proper collection and storage in dedicated warehouses.

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#### Industrial Waste Generated in Fiscal Year 2016



### Industrial Waste Disposed of as Landfill in Fiscal Year 2016



### ΤΟΡΙϹ

### Comprehensive Industrial Waste Management System Introduced

In fiscal year 2016, the DIC Group in Japan explored the introduction and conducted tests of a comprehensive industrial waste management system for use with the country's Electronic Manifest (e-Manifest) system. The e-Manifest system manages the movement of industrial waste by facilitating the electronic transmission of manifest information and tracking of the flow of waste from generation to final disposal. Unlike paper manifests, e-Manifests offer easy data input and eliminates the need for administrative reporting and storage by generators.

With anticipated revisions to Japan's Waste Management Law expected to increase demand for greater manifest data transparency, DIC resolved to introduce an industrial waste management system that would facilitate the efficient collection of data while also ensuring legal and regulatory compliance. The Group has completed evaluation of the system at several sites and intends to gradually expand deployment in fiscal year 2017.

### Differences Between E-Manifests and Paper Manifests



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#### Initiatives by the DIC Group Overseas

In addition to ensuring the disposal of industrial waste in a manner that complies with national and regional legal and regulatory requirements, the DIC Group's overseas production facilities work to minimize industrial waste through the voluntary recycling and reuse of materials.

In fiscal year 2015, DIC Group companies in the Americas and Europe, Greater China and the Asia–Pacific region deployed measures aimed at achieving reductions in industrial waste generated during various production processes that exceeded nationally and regionally mandated levels. Nonetheless, the total volume of industrial waste generated by DIC Group production facilities overseas rose 5.7%. Looking ahead, regional headquarters in these areas will focus on further reinforcing compliance with local laws and regulations while at the same time cooperating with DIC's Responsible Care and Production Management departments to analyze the reasons for this increase with the aim of curbing the generation of industrial waste and reducing the volume of industrial waste disposed of as landfill.

### Environmental Impact of the DIC Group's Operating Activities

The DIC Group quantifies the environmental inputs (consumption of energy and other resources) and outputs (emissions into the environment) of its operating activities, and uses its findings to formulate comprehensive and efficient strategies for reducing its environmental footprint.

The chart below is a comprehensive illustration of the environmental impact of the DIC Group's domestic operating activities in fiscal year 2016. The chart shows environmental impact for two input items (total energy consumption and total water consumption) and six output items (emissions of 551 chemical substances (including those designated under the PRTR<sup>+1</sup>) and one substance group<sup>+2</sup>, emissions of CO<sub>2</sub>, emissions of NOx, emissions of SOx, COD in wastewater and industrial waste disposed of as landfill).



\*1 The PRTR is a scheme in Japan for assessing, aggregating and disseminating data on the sources of hazardous chemicals, amounts released into the environment and amounts transferred off-site from industrial establishments via waste products.
\*2 The "551 substances and one substance group" comprises 462 chemical substances designated by the PRTR and 89 substances and one substance group targeted for study by the JCIA.

### ΤΟΡΙΟ

#### **DIC India Celebrates World Environment Week**

The DIC Group promotes diverse ESH initiatives in countries and territories around the world. In June 2016, DIC India Ltd. celebrated World Environment Week, a campaign aimed at reinforcing the company's commitment to ongoing environmental protection. Individual days during the week were assigned specific themes and named accordingly—for example, Water Conservation Day, Energy Conservation Day and Waste Minimization Day—and a variety of programs were offered, including theme-specific employee awareness training. DIC applauds these and other voluntary initiatives that enhance employees' understanding of environmental and safety issues and recognizes the importance of such efforts in helping to realize a sustainable society.



World Environment Week at DIC India

## Managing Chemical Substances in Products

Goals and Achievements of Major Initiatives Evaluations are based on self-evaluations of current progress. Key: \*\*\* = Excellent; \*\* = Satisfactory; \* = Still needs work

Objectives of initiatives	Goals for fiscal year 2016	Achievements in fiscal year 2016	Evaluation	Goals for fiscal year 2017
Respond to requirements relating to chemical product information.	<ul> <li>Assign full-time managers in charge of legal and regulatory compliance to regional headquarters.</li> <li>Expand local information-gathering configurations.</li> </ul>	<ul> <li>Full-time managers were assigned to regional headquarters for Greater China and the Asia-Pacific region.</li> <li>Local information-gathering configura- tions were reinforced.</li> </ul>	**	Rebuild comprehensive system for managing chemical substances.     Reinforce local information-gathering configurations.
Comply with regulations in Japan and overseas (e.g., Japan's Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc., and Poisonous and Deleterious Substances Control Act; the EU's REACH legislation; and the U.S.' TSCA.	<ul> <li>Continue to promote use of the Wercs at overseas Group companies.</li> <li>Continue taking steps to comply with Taiwan's Toxic Chemical Substances Control Act and Occupational Safety and Health Act.</li> <li>Promote the registration of chemical substances to which REACH applies.</li> </ul>	<ul> <li>The Wercs-linked label systems were introduced at three Group companies in Indonesia.</li> <li>Steps to comply with Taiwan's Toxic Chemi- cal Substances Control Act and Occupa- tional Safety and Health Act continued.</li> <li>Efforts to promote the registration of chemi- cal substances to which REACH applies continued.</li> <li>Promoted efforts to accommodate the TSCA.</li> </ul>	** ** **	<ul> <li>Promote compliance with Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.</li> <li>Expand deployment of the Wercs at overseas DIC Group companies.</li> <li>Promote the registration of chemical substances to which REACH applies.</li> <li>Complete compliance with reporting requirements imposed by the TSCA Inventory Reset.</li> </ul>

### > Promoting the Safety of Chemical Substances and Products

### Basic Approach and Framework for Promotion

In 2003, the UN Economic Commission for Europe issued the first edition of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), the idea being to reduce chemical risks through an internationally harmonized approach to classification of chemicals by type and toxicity, the clear display of information on labels for better understanding and the provision of SDSs.

As a part of its efforts to ensure effective product stewardship, the foundation of Responsible Care, of which emphasize the management of chemicals across its entire supply chain, DIC sought to respond swiftly to this development, as well as to provide customers with crucial hazard-related information, in 2009 DIC established CIRIUS (Chemical Substance Information Comprehensive Management System) for domestic products. In addition to complying with GHS, CIRIUS enables DIC to provide customers with complete information on hazards associated with chemical substances, thereby helping to reduce related risks. CIRIUS centralizes the management of information about raw materials and chemicals to facilitate the provision of reliable SDSs. The system also automatically checks various laws and regulations. In 2013, DIC began using the Wercs (a global SDS and label creation system developed with know-how from DIC) for products for export. As a result, DIC now has a structure that enables it to compile GHS-compliant SDSs for all exported products that comply with national and regional laws and regulations and is accessible in relevant local languages. In April 2014, DIC began using the Wercs to issue SDSs and labels for all exported products. Subsequently, DIC also began deploying the Wercs at overseas Group companies.

As specialized knowledge about chemical substance management is essential, DIC focuses on training in the manufacture, import and handling of chemicals in accordance with applicable laws and regulations and draws on its proprietary licensing system to enhance the skills of employees.

#### Framework for Promoting the Safety of Chemical Substances and Products



### Reducing Risks by Providing Information Worldwide

### Maximizing the Wercs Global SDS and Label Creation System

In April 2013, DIC consolidated the management of information on the composition of chemical substances in exported products and on chemical substance legislation in various countries and regions, introducing the Wercs, a new system that automatically creates product SDSs in the language—and in compliance with the laws and regulations—of individual export destinations, creating a foundation for its global information system and helping reduce risks for customers.

CIRIUS centralizes the management of information about raw materials and chemicals for products manufactured in Japan. The system also automatically checks the Foreign Exchange and Foreign Trade Act, the Security Trade Control Law, the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc., and the Chemical Substances Control Law, as well as the Industrial Safety and Health Act and the Poisonous and Deleterious Substances Control Act, to facilitate the provision of reliable SDSs.

The Wercs, which incorporates know-how accumulated by DIC in the creation and use of CIRIUS, was developed with the aim of expediting the provision of such information for products for export. The Wercs facilitates the translation of data into 46 different languages—including the languages of the 19 countries and territories to which DIC currently exports products—and the preparation of SDSs and labels in local languages that comply with the laws and regulations of countries and territories in the Americas, Europe, Asia and elsewhere.

Since switching to the Wercs for creating SDSs and issuing labels for exported products, DIC has expanded the number of countries for which it can prepare local-language, legally compliant SDSs and labels to include the ROK, Europe, the United States, the PRC and Taiwan. Since April 2014, all SDSs and labels for products for export have been prepared using the Wercs. DIC is also promoting deployment of the system to Group companies in Japan, which are using the Wercs in tandem with CIRIUS to ensure the effective management of chemical substances across its domestic Group supply chain.

DIC is further expanding deployment of the Wercs to DIC Group companies overseas. With the aim of promptly updating its labels to comply with GHS hazard labeling standards in the event of revisions to laws and regulations or the identification of new hazards, the Company is setting up an on-demand label printing system that links the Wercs with production lines. In October 2016, the Wercs–linked label systems were introduced at three Group companies in Indonesia. In fiscal year 2017, DIC will promote the horizontal deployment of the Wercs at DIC Group companies in Thailand, Malaysia and Taiwan with the aim of preventing human error and increasing business efficiency, and of facilitating globally consistent management based on a common system.



 $\operatorname{DIC}$  provides information on chemical substances using CIRIUS in Japan and the Wercs overseas



Indonesian-language labels



### **On-Demand Label Printing System Flowchart**

### Complying with Laws and Regulations

The principal goal governing the management of chemical substances worldwide is that implied in the agreement, reached at the World Summit on Sustainable Development (WSSD) in 2002, to ensure, by 2020, that chemicals are used and produced in ways that lead to the minimization of significant adverse effect. Recent years have seen the European Union enact Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)\*<sup>1</sup> legislation, and the ROK, the PRC and Taiwan introduce legislation aimed at strengthening chemical substances risk management. As well, countries in Southeast Asia have deployed the GHS.

DIC collects the latest information on chemical substances in overseas markets through international consultants and experts, news wire services and chemicals industry associations to ensure that it can respond swiftly and effectively to revisions in laws. The Company supplies the latest information to its customers by creating SDSs and issuing labels. In 2009, DIC began using CIRIUS to manage chemical substance information for products manufactured in Japan. In fiscal year 2013, DIC switched to the Wercs for creating SDSs and issuing labels for existing exported products.

In fiscal year 2016, steps were taken across Asia to reinforce the management of chemical substances. Of particular note, the PRC announced new regulations governing hazardous chemicals, while the ROK dramatically revised the Act on the Registration and Evaluation of Chemicals (K-REACH) and Thailand proceeded with preparations to introduce a new system for registering chemical substances. To ensure an accurate grasp of these and other trends, DIC worked steadily to strengthen communication with local Group companies and reinforced its management framework by assigning dedicated full-time managers to regional headquarters for Greater China and the Asia–Pacific region.

In the United States, significant amendments were made to the Toxic Substances Control Act (TSCA)\*<sup>2</sup> effective June 22, 2016, requiring a comprehensive inventory reset (review of existing chemicals on the TSCA list).

In advance of the May 2018 deadline for registering existing chemical substances under REACH, DIC is registering existing exported low-volume chemical substances, i.e., those produced in volumes of up to 100 metric tonnes per year, as well as promoting ongoing efforts to respond to substance evaluations by the European Chemicals Agency (ECHA) and ECHA member countries and collecting information on REACH substances of very high concern (SVHCs), restricted substances and authorized substances.

\*1 Under REACH, businesses bear full responsibility for evaluating the safety of chemical substances they produce and/or use with no distinction made between "existing" and "new" substances. REACH also prohibits the use of specified chemical substances that pose unacceptable risks to human health.

\*2 The TSCA is a law administered by the U.S. Environmental Protection Agency (EPA) that regulates chemical substances produced in or imported into the United States.

### Training in Chemical Substance Management

Recognizing legal and regulatory compliance as central to risk management for DIC as a comprehensive chemicals manufacturer, the Company endeavors to improve employees' awareness and knowledge of chemical substance regulations in Japan and overseas by holding workshops and maintaining a proprietary internal licensing system. Efforts include providing specialized training for individuals in Japan involved in exporting chemical substances in line with the Foreign Exchange and Foreign Trade Act and for individuals involved in importing substances in line with the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc., among others, and issues licenses, valid for two or three years, to employees who have passed in-house examinations. As of fiscal year 2016, 1,407 employees held a Class A license, which requires specialized knowledge, and 242 held a Class B license, which pertains to ancillary operations. A further 98 individuals had completed an advanced course demanding superior capabilities. In addition, 287 individuals held import licenses.

Acknowledging the importance of fostering experts with sophisticated specialized knowledge, DIC Group companies also promoted a variety of initiatives. In fiscal year 2016, Group companies in the PRC staged a group training session with consultants serving as instructors. A total of 42 individuals from 16 companies participated in this training session.



Seminar on laws and regulations governing chemical substance management for Group companies in the PRC held in Hangzhou

With the full-fledged global deployment of the Wercs, DIC has dispatched Responsible Care Department officers to hold seminars at principal Group companies in Greater China and the Asia–Pacific region (Taiwan, Thailand, Malaysia and Indonesia) since fiscal year 2014.

Such seminars go beyond officers explaining the operations and advantages of the Wercs. It is important for participants to understand the background and intent of legal revisions and steadily amass basic data and update information. Constantly injecting such information into systems maximizes the potential of the Wercs, making it possible to provide valuable and timely information to customers and reduce overall social risks.

Taking the opinions and impressions of seminar participants into consideration, DIC will continue to promote efforts to improve operability and data transmission speed with the aim of making the Wercs easier to use.



Seminar on the Wercs (Lidye Chemical Co., Ltd., Taiwan)

VOICE PPIC Department Manager, Supply Chain Division, P.T. Pardic Jaya Chemicals Sri Yuniati

### The introduction of the Wercs has contributed to cost reductions.



We have always used spray marking to put product names on packaging, but the government's ESH management system led us to realize that spray marking contaminates the atmosphere and is harmful to workers' health. We also used to subcontract the printing of labels containing information on toxicity, handling instructions and cautions. With the introduction of a label printing system linked with the Wercs, we are now able to print labels with product names and labels containing toxicity and other information. This has greatly increased flexibility and eliminated the need to order printed labels in bulk, resulting in excess inventories. The new system enables us to print only the number of labels we need, which has contributed to cost reductions.

Senior Manager in charge of regulatory affairs, Responsible Care Department Shinobu Yamaguchi

Looking ahead to 2020, we are working to respond effectively to increasingly robust laws and regulations in global markets.



One of the agreements reached at the WSSD in 2002 was to ensure, by 2020, that chemicals are used and produced in ways that lead to the minimization of significant adverse effect. To this end, emerging economies, as well as developed economies, are accelerating efforts to create and reinforce laws and regulations governing chemical substances. To ensure that the DIC Group has an accurate grasp of such trends, we are focused on fortifying our information-gathering capabilities, maximizing know-how accumulated in the creation and use of CIRIUS, enhancing our ability to accommodate multiple languages, providing specialized training for overseas DIC Group employees and bolstering expertise in the operation of these systems. Going forward, we will continue to step up initiatives related to the safety of chemical substances and products.

## Preventing Global Warming

Goals and Achievements of Major Initiatives Evaluations are based on self-evaluations of current progress. Key: \*\* = Excellent; \*\* = Satisfactory; \* = Still needs work

Objectives of initiatives	Goals for fiscal year 2016	Achievements in fiscal year 2016	Evaluation	Goals for fiscal year 2017
	<ul> <li>DIC Group</li> <li>Reduce CO<sub>2</sub> emissions per unit of production 1.0% from the fiscal year 2015 level.</li> <li>Reduce CO<sub>2</sub> emissions 1.0% from the fiscal year 2015 level.</li> </ul>	<ol> <li>CO<sub>2</sub> emissions per metric tonne of production declined 2.3%.</li> <li>CO<sub>2</sub> emissions edged up 0.1%.</li> </ol>	*	DIC Group ①Reduce CO <sub>2</sub> emissions 7.0% from the fiscal year 2013 level by fiscal year 2020 (average annual decrease of 1.0%).
Reduce emissions of CO <sub>2</sub> at sites (Scope 1 and 2).	<ul> <li>DIC Group (Japan)</li> <li>(1) Reduce CO<sub>2</sub> emissions per unit of production 1.0% from the fiscal year 2015 level.</li> <li>(2) Reduce CO<sub>2</sub> emissions 1.0% from the fiscal year 2015 level.</li> <li>(3) Reduce energy consumption 1.0% by conserving energy.</li> </ul>	r unit of scal year from the 1.0% by TCO <sub>2</sub> emissions per metric tonne of production declined 4.5%. (2) CO <sub>2</sub> emissions declined 3.4%.		<ul> <li>DIC Group (Japan)</li> <li>Reduce CO<sub>2</sub> emissions 7.0% from the fiscal year 2013 level by fiscal year 2020 (average annual decrease of 1.0%).</li> <li>Reduce CO<sub>2</sub> emissions per unit of production (comply with Japan's Act on the Rational Use of Energy) Reduce CO<sub>2</sub> emissions per unit of production from the fiscal year 2013 level by fiscal year 2020 (average annual decrease of 1.0%).</li> </ul>
Reduce emissions of $CO_2$ when transporting goods (Scope 3).	<ul> <li>DIC Group (Japan)</li> <li>Promote modal shift and improve transport efficiency to reduce energy consumed per unit of production.</li> <li>Reduce CO<sub>2</sub> emissions from logistics.</li> </ul>	<ol> <li>Energy consumed per unit of production rose 2.0%.</li> <li>CO<sub>2</sub> emissions per unit of production declined 1.0%.</li> </ol>	* * *	Reduce CO <sub>2</sub> emissions by 1.0% by promoting modal shift and improving transport efficiency.

Note:In fiscal year 2016, production volume was up slightly, rising 1.2% for DIC in Japan and 2.4% for the global DIC Group. As a consequence, CO<sub>2</sub> emissions for the DIC Group were essentially level, edging up 0.1%, while CO<sub>2</sub> emissions in Japan declined 3.4%.

### **Basic Approach**

Climate change, a principal cause of which is global warming, is an increasingly pressing issue for the entire world. The Intergovernmental Panel on Climate Change (IPCC), a leading scientific body dedicated to the assessment of climate change, continues to urge its member countries to reinforce and expand the application of climate change countermeasures. With 16 of its 33 Group sites (and 21 offices and research facilities) in Japan accorded Designated Energy Management Factory status, DIC has included initiatives aimed at reducing greenhouse gas emissions from its production facilities in its annual sustainability policy. The Company is currently implementing initiatives to reduce its consumption of energy, and thus its emissions of CO<sub>2</sub>, as well as promoting the active disclosure of related data.

- 1 Undertake energy-saving initiatives Groupwide
- Deploy effective strategies through working group activities
- Operate energy-saving cogeneration systems (combined heat and power generating facilities)
- 4 Employ energy from renewable resources (biomass, wind power and solar power) at suitable sites
- S Extend energy-saving initiatives to DIC Group companies overseas

### > Framework for Promoting Energy-Saving Initiatives

DIC and DIC Group companies in Japan have established energy-saving promotion committees at each of their production and R&D sites. Committee activities include confirming the progress of initiatives, engaging in discussions and conducting patrols. DIC has also set up an energy-saving working group comprising members chosen from each production facility that fosters the exchange of information, research pertaining to new items and the Groupwide implementation of effective measures. This combination of site- and Group-level initiatives forms the framework under which the DIC Group works to reduce  $CO_2$  emissions.

DIC Group companies overseas promote a wide range of independent energy-saving initiatives. The Production Management Department provides support on multiple fronts, including the deployment of management systems and the training of employees.

### Principal Initiatives in Fiscal Year 2016

#### Formulation of Medium-Term Target for Reducing CO<sub>2</sub> Emissions by Fiscal Year 2020

In October 2016, the Sustainability Committee, which is responsible for formulating the DIC Group's annual sustainability policy and activity plans, approved a new medium-term target for the reduction of  $CO_2$  emissions. In line with this target, the Group will work to achieve an average annual decrease of 1.0% with the aim of realizing a 7.0% reduction from the fiscal year 2013 level by fiscal year 2020.

## Forecast for Global CO<sub>2</sub> Emissions in Fiscal Year 2020 and Anticipated Contributing Factors



### 2 Energy Consumption and CO<sub>2</sub> Emissions by the Global DIC Group

Despite to a 2.4% increase in production volume, energy consumption by DIC Group companies worldwide rose 2.5%, to the equivalent to 293,577 kiloliters of crude oil, compared with 286,392 kiloliters in fiscal year 2015, global  $CO_2$  emissions remained essentially level at 659,378 metric tonnes, compared with 658,811 metric tonnes.

The DIC Group manufactures a wide variety of products at production facilities around the world, including printing inks, polymers, pigments, LCs, engineering plastics and compounds. Recent months have seen an increase in production of fine chemicals, which is energy intensive, and a corresponding decline in production of items that require comparatively little energy. Nonetheless, CO<sub>2</sub> emissions were on a par with the previous fiscal year. Factors behind this included the start of full-scale operation of a new cogeneration system at the Kashima Plant, efforts to achieve an appropriate balance of energy from renewable sources such as biomass boilers, wind power and solar power, and the implementation of 645 energy-saving initiatives. In contrast, CO<sub>2</sub> emissions per metric tonne of production ("CO<sub>2</sub> emissions per unit of production," expressed in terms of kilograms of CO<sub>2</sub> per metric tonne of production) declined 2.3% in fiscal year 2016, to 338.0 kg/metric tonne, from 345.8 kg/metric tonne in fiscal year 2015, a decrease of 2.0% from fiscal year 2013, the Group's current base year. The decline in CO<sub>2</sub> emissions per unit of production underscores the Group's success in curbing emissions despite an increase in production. The Group will further roll out fuel conversion and high-efficiency equipment, as well as revamp processes and improve capacity utilization, at all of its production sites.

### Global CO<sub>2</sub> Emissions in Fiscal Year 2016



#### Global CO<sub>2</sub> Emissions and Change from Base Year (Fiscal Year 2013)



### CO<sub>2</sub> Emissions in Fiscal Year 2016 by Region



Global Energy Consumption and Change in Energy Consumption per Unit of Production from Base Year (Fiscal Year 2013)



DIC Report 2017

Factor	Unit	Impact on CO <sub>2</sub> emissions	Change in weighting	Notes
Improvement in productivity	Metric tonnes	-9,214	-1.4%	The impact of efforts to improve production efficiency in North America and Europe was particularly significant.
Impact of 645 energy-saving initiatives	Metric tonnes	-6,277	-1.0%	A total of ¥62.7 billion was invested in energy-saving initiatives, with ¥18.9 billion going to rationalization efforts.
CO <sub>2</sub> emissions from non-energy sources	Metric tonnes	-5,654	-0.9%	Incinerator volume at the Chiba Plant decreased.
Start of operation of the Kashima Plant's new cogeneration system and positive impact of balanced energy mix	Metric tonnes	-4,589	<b>-0.7%</b>	This factor reflects the plant's new 1,700 kW capacity cogeneration system and an improvement in biomass boiler performance.
Change in CO <sub>2</sub> emissions factor for electric power purchased	Metric tonnes	-2,771	-0.4%	The CO <sub>2</sub> emissions factor for purchased electric power in Japan improved.
Expansion of pigment production in the Asia-Pacific region	Metric tonnes	12,000	<b>1.8%</b>	Output at a pigments production facility increased 2.5 times.
Increase in production volume	Metric tonnes	11,119	<b>1.7%</b>	Global production volume was up 2.4%.
Other factors	Metric tonnes	4,007	0.6%	Other factors include changes in product mix.
Reduced operation of the Chiba Plant's thermal boiler during boiler replacement period	Metric tonnes	1,946	0.3%	Operation of the plant's once-through boiler increased.
Total	Metric tonnes	567	0.1%	

#### Factors Contributing to the Change in CO<sub>2</sub> Emissions by the Global DIC Group in Fiscal Year 2016

### **3** Energy Consumption and CO<sub>2</sub> Emissions by the DIC Group in Japan

In fiscal year 2016, the DIC Group in Japan—encompassing the 54 sites of DIC Corporation and domestic DIC Group companies—reported a 1.2% increase in production volume from fiscal year 2015. Energy consumption by the DIC Group in Japan in fiscal year 2016 rose 1.4%, to the equivalent of 111,306 kiloliters of crude oil, from 109,798 kiloliters in fiscal year 2015, while energy consumption per unit of production—an indicator set forth in Japan's Act on the Rational Use of Energy—was level at 4.77 GJ/metric tonne. In contrast, CO<sub>2</sub> emissions declined 3.4%, to 242,194 metric tonnes, from 250,720 metric tonnes in fiscal year 2015, while CO<sub>2</sub> emissions per unit of production, at 268.0 kg CO<sub>2</sub> equivalent, were down 4.5%, from 280.7 kg CO<sub>2</sub> in the previous period. The principal factors behind these decreases included the start of full-scale operation of a new cogeneration system with a 1,700 kW capacity at the Kashima Plant, one of the Group's principal production facilities in Japan, efforts to achieve an appropriate balance of renewable energy sources (biomass boilers, wind power, solar power) and the implementation of 573 energy-saving initiatives.

#### DIC Group in Japan





Factor	Unit	Impact on CO <sub>2</sub> emissions	Change in weighting	Notes
CO <sub>2</sub> emissions from non-energy sources	Metric tonnes	-5,654	-2.3%	Incinerator volume at the Chiba Plant decreased.
Start of operation of the Kashima Plant's new cogeneration system and positive impact of balanced energy mix	Metric tonnes	-4,589	<b>-1.8%</b>	This factor reflects the plant's new 1,700 kW capacity cogeneration system and an improvement in biomass boiler performance
Impact of 573 energy-saving initiatives	Metric tonnes	-4,460	<b>-1.8%</b>	A total of ¥56.2 billion was invested in energy-saving initiatives, with ¥13.1 billion going to rationalization efforts
Change in CO <sub>2</sub> emissions factor for electric power purchased	Metric tonnes	-2,771	-1.1%	The $CO_2$ emissions factor for purchased electric power improved.
Increase in production volume	Metric tonnes	3,001	1.2%	Production volume in Japan was up 1.2%.
Increase in base load consumption (clean rooms, etc.)	Metric tonnes	2,507	1.0%	Operating rates for energy-consuming facilities not related to production increased.
Reduced operation of the Chiba Plant's thermal boiler during boiler replacement period	Metric tonnes	1,946	0.8%	Operation of the plant's once-through boiler increased.
Other factors	Metric tonnes	1,493	0.6%	Other factors include changes in product mix, among others.
Total	Metric tonnes	-8,527	-3.4%	

### Factors Contributing to the Change in CO<sub>2</sub> Emissions by the DIC Group in Japan in Fiscal Year 2016

### 4 *Energy-Saving Initiatives by the DIC Group in Japan*

All plants and R&D sites endeavor to conserve energy through the following initiatives to reduce base load energy consumption and by applying the PDCA cycle to improve the efficiency of production methods, thereby reducing energy used, as well as to shorten process times.

- Employ highly efficient lighting and air conditioning and measures to cut waste
- · Introduce energy-saving controls on pumps and blowers
- · Use more efficient compressors and implement measures to reduce pressure losses
- · Measures to improve the power factors of electric equipment
- Adopt high coefficient of performance (COP) chillers and measures to prevent cold and hot water supply waste
- · Reduce boiler fuel through the recovery of waste heat
- · Ensure appropriate warming times and temperatures for raw materials

In fiscal year 2016, these initiatives reduced energy consumption by 83,000 GJ (2,140 metric tonnes carbon equivalent). This corresponds to 10,700 200-liter drums of crude oil, or 1.9% of total energy consumption by the DIC Group in Japan in the previous period. Going forward, the Group will continue to promote energy-saving measures, as well as to share best practices among sites. The Group will also reinforce operating manuals for key energy-consuming equipment, including boilers, chillers and compressors, to optimize performance, as well as step up the deployment of initiatives both in Japan and overseas.

### Key Energy-Saving Initiatives Implemented by the DIC Group in Japan in Fiscal Year 2016

No.	Unit	Energy-saving initiative	Reduction in annual energy consumption (GJ)	Reduction in CO <sub>2</sub> emissions (metric tonnes)
1	Chiba Plant	Reduced steam losses by introducing direct reception from tanker trucks delivering pigments for printing inks	3,624	218
2	Yokkaichi Plant	Shifted to use of one brine freezing unit	2,317	118
3	Utsunomiya Plant	Shortened operating times of cooling water pumps	2,058	106
4	Komaki Plant	Reduced steam used by repairing steam line	2,216	113
5	Tatebayashi Plant	Optimized capacity of cooling water pumps	2,432	125
6	Tatebayashi Plant	Reduced energy consumption by adjusting operation of water cooling-related equipment	1,955	100
7	KJ Chemicals Corporation	Reduced costs associated with dynamic temperature of N,N-Dimethyl acrylamide (DMAA)	2,922	178
8	Hokuriku Plant	Reduced operating times for nitrogen generation devices by 95%	1,262	82
9	Gunma Plant	Changed electric heating temperature settings and shut equipment off when not in use	1,461	75
10	Yokkaichi Plant	Set standards for waste heat recovery	1,390	69
11	Kansai Plant	Switched from kerosene-powered to flue gas recirculation boilers	732	66
12	Kashima Plant	Reduced energy consumption by improving operation of steam traps	1,200	62
13	Sakai Plant	Reduced consumption of town gas by optimizing the temperature of water supplied to deodorization furnace	1,222	62
14	KJ Chemicals Corporation	Reduced costs associated with dynamic temperature of acryloyl morpholine (ACMO)	958	59
15	Sakai Plant	Upgraded to EHP air conditioning systems on the second and third floors of the No. 1 building	1,147	58
16	Hokuriku Plant	Reduced energy consumption by repairing air valves to prevent air leaks	889	58
		Subtotal (17 initiatives)	27,785	1,549
		Others (556 initiatives)	54,161	2,912
		Total (573 initiatives)	81,946	4,461

# 573 energy-saving initiatives accounted for a reduction in energy consumption equivalent to 10,700 200-liter drums of crude oil



### Improving Yields by Expanding Use of System to Enhance the Visibility of Energy Consumption

With the aim of optimizing energy use on an individual facility basis, DIC developed a system that measures, monitors and verifies waste and irregularities in use in real-time, thereby enhancing the visibility of energy consumption. Initially installed at the Hokuriku Plant in 2012, the system—which won the ECCJ Chairman's Prize at Japan's 2012 Energy Conservation Grand Prize awards, sponsored by the Energy Conservation Center, Japan (ECCJ)—has since been rolled out at DIC sites across Japan. In fiscal year 2014, the system was installed at the Komaki Plant. In addition, a system to enhance visibility that also analyzes energy consumption during different production processes was installed on the V, C and B production floors of the Chiba, Kashima and Sakai plants, respectively, to reproduce optimum yields for materials inputs. In fiscal year 2016, DIC installed a more advanced version of the system at the Yokkaichi Plant.

One outcome of efforts to enhance the visibility of energy consumption was an increase in the number of categories of Scope 3\*, in which DIC reports indirect emissions of CO<sub>2</sub>, from one ("upstream transportation and distribution") in fiscal year 2012 to six (including "capital goods," "waste generated in operations" and "business travel") in fiscal year 2013. \*Scope 3 is the Greenhouse Gas Protocol's standard for calculating indirect greenhouse gas emissions resulting from production, transport, business travel and commuting, among others, across entire supply chains.







Employee commutes Business travel Waste from businesses
 Upstream transportation and distribution Fuel and energy activities not included in Scope 1 and 2
 Capital goods

### Reducing Energy Consumption and Enhancing Product Quality through Kaizen Skill Improvement Training

Having recognized that enhancing the awareness of employees in production and providing them with the tools to continuously improve their work are crucial to strengthening front-line capabilities, in 2008 DIC began offering the Kaizen Skill Improvement Training program. This program—which is structured around four themes, namely, reducing energy consumption, increasing yields, enhancing product quality and rationalizing operation—seeks to foster professionals who can identify and resolve issues on their own initiative. Participants spend one year participating in initiatives aimed at improving quality control methods and the following year putting their findings into practice. Each December, achievements are presented at a briefing attended by pertinent plant general managers and directors.

Since 2012, DIC has also offered the Kaizen Initiative Instructor Training program, designed to equip employees who have completed the Kaizen Skill Improvement Training program with the leadership and educational skills necessary to serve as instructors for the program. As of the end of fiscal year 2016, a cumulative total of 412 employees from DIC sites in Japan had completed this program, with approximately 10% subsequently going on to earn accreditation as program instructors, adding momentum to energy-saving and other initiatives.



Kaizen Skill Improvement Training

#### Number of Employees Completing Kaizen Training (cumulative)



### 5 Increasing Independent Electric Power Generation through Cogeneration and the Use of Renewable Energy

### Increasing Cogeneration System-Based Independent Electric Power Generation

With the aim of increasing energy efficiency, and as a precaution against natural disasters, the DIC Group in Japan is advancing the systematic adoption of cogeneration and the use of renewable energy, that is, energy from sources that are naturally replenished. Cogeneration systems burn fuel to drive turbines, facilitating the production of electric power and the recovery and reuse of waste heat (steam and hot water), thereby improving energy efficiency.

With cogeneration systems already in operation at five domestic plants (Chiba, Shiga, Saitama, Gunma and Tokyo), in December 2015 DIC installed a natural gas turbine–powered cogeneration system with a capacity of 1,700 kW at its Kashima Plant. These systems operated at full capacity for all of fiscal year 2016, contributing to the reduction of CO<sub>2</sub> emissions. In April 2017, the Company replaced the existing cogeneration system at its Chiba Plant, which had a capacity of 6,000 kW, with a new high-efficiency 3,800 kW capacity system, with the aim of optimizing capacity and reducing energy consumption. As of December 2016, the total combined maximum generating capacity of the Group's cogeneration systems in Japan was 21,000 kW. Electric power produced through cogeneration in fiscal year 2016 amounted to 50,440,000 kW, equivalent to 18.4% of the electric power consumed by the DIC Group in Japan during the period.





Natural gas turbine-powered cogeneration system at the Chiba Plant

### Using Renewable Energy

In Japan, the DIC Group actively promotes the use of energy from renewable sources at suitable sites. The biomass boiler at the Kashima Plant (generating capacity: 4,000 kW and 30 tons of steam per hour) contributes significantly to this effort. DIC focuses on improving the quality of wood chips used as boiler fuel, which influences operating rates, as well as on enhancing maintenance procedures. By combining this boiler with two wind power generation facilities (each with a generating capacity of 2,300 kW) and a solar power generation system (100 kW), the Group aims to achieve an optimal power mix of purchased electric power, electric power produced through cogeneration systems and electric power generated using renewable energy.

In fiscal year 2016, the Kashima Plant's biomass boiler's operating rates were reduced owing to maintenance, resulting in a 15.5% decline in renewable energy usage volume from the previous fiscal year, to 10,579 kiloliters (9.5% of the DIC Group's energy consumption in Japan). As a consequence, the positive impact of the use of renewable energy on the Group's CO<sub>2</sub> emissions in fiscal year 2016 was 25,884 metric tonnes. The plant is currently in the process of building a 1,600 kW megasolar system (comprising 5,588 278-watt solar panels, with a surface area of 13,722m<sup>2</sup>), which is scheduled to begin operating in January 2018. In December 2017, DIC also plans to install a biomass boiler at the Hokuriku Plant in Ishikawa Prefecture, in line with its ongoing commitment to achieving an optimal power mix while at the same time reducing emissions of CO<sub>2</sub>.

In fiscal year 2016, electric power generated in Japan using cogeneration systems and other independent means amounted to 70,140,000 kW, an increase of 9.0% from fiscal year 2015, representing 25.6% of total energy consumed by the DIC Group in Japan.

CO<sub>2</sub> Emission Reductions at Kashima Plant (January–December 2016)



### Electric Power Used by the DIC Group in Japan by Energy Source





### Reducing Energy Consumption at the DIC Group's Global Corporate Headquarters Building

In May 2015, DIC completed the reconstruction of its corporate headquarters, the DIC Building in Tokyo's Nihonbashi district, which was undertaken with the aim of centralizing headquarters functions and improving the building's environmental efficiency. Since then, the building's maintenance company and the Production Management Department and General Affairs and HR Department have worked together to maintain the building's built-in environmental performance features and promote energy-saving initiatives, including reminding employees to be vigilant about turning off lighting and air conditioning when not in use. Despite having a floor space of 19,590 square meters, which is roughly 60% greater than the building it replaced (12,324 m<sup>2</sup>), its annual energy consumption in fiscal year 2016 was equivalent to 508 kiloliters of crude oil, 34% less than its predecessor, the average energy consumption of which was equivalent to 766 kiloliters of crude oil.

### **Key Environmental Efficiencies**

- CO<sub>2</sub> emissions from building operations at time of basic design: 43.3% (1,089 metric tonnes of CO<sub>2</sub> a year) lower than the baseline of Tokyo Metropolitan Government's Energy Efficiency Carte
- High-efficiency transformers and solar power generation facilities (50 kW) and storage batteries (100 Ah)
- Lighting: Highly efficient LED grid lighting, Ecolumi LED and automatic dimming control system
- · Air conditioning: Natural ventilation and distributed control system through high-efficiency
- electric heat source, air-cooled heat pump air conditioner
- CO2 control ventilation system used for underground car park
- Building energy management system used to conserve power
- Rain and groundwater used to irrigate rooftop greenery and supply all toilets in the building
- Environmental efficiency assessment: CASBEE\* Environmental Efficiency Assessment: Class S
- \* The Comprehensive Assessment System for Built Environment Efficiency (CASBEE) has five certification levels: Class S (excellent), Class A (very good), Class B+ (good), Class B- (slightly poor) and Class C (poor).

### 6 Energy Consumption and CO<sub>2</sub> Emissions by the DIC Group Overseas

Reflecting a 3.5% increase in production volume, energy consumption by DIC Group companies overseas in fiscal year 2016 rose 3.2%, to 182,271 kiloliters of crude oil equivalent, from 176,595 kiloliters in fiscal year 2015, while energy consumption per unit of production was essentially level at 6.746 GJ/metric tonne, compared with 6.764 GJ/metric tonne in the prerious period.

In contrast, CO<sub>2</sub> emissions by DIC Group companies overseas rose only 2.2%, to 417,184 metric tonnes, from 408,091 metric tonnes in the previous period, while CO<sub>2</sub> emissions per unit of production declined 1.2%, to 398.4 kg/metric tonne, from 40.3.3 kg/metric tonne. The principal factor pushing up CO<sub>2</sub> emissions was an increase in production in the PRC and the Asia–Pacific region, particularly of LCs, pigments and other products that consume higher energy per unit of production. However, efforts to improve production efficiency in North America and Europe, where production volume edged up 0.5%, played a significant role in minimizing the impact of this factor and keeping the increase in CO<sub>2</sub> emissions by the DIC Group overseas to 2.2%.



Total floor area: 19,590 m<sup>2</sup> 12 floors above ground /four floors below ground Number of employees 1,230



CO<sub>2</sub> Emissions by the DIC Group Overseas and Change



### CO<sub>2</sub> Emissions per Unit of Production by the DIC Group Overseas and Change from Base Year (Fiscal Year 2013)



### Key Energy-Saving Initiatives Implemented by the DIC Group Overseas in Fiscal Year 2016

			Impact in fise	cal year 2016
Region	Plant	Energy-saving initiative	Reduction in annual energy consumption (kiloliters)	Reduction in CO <sub>2</sub> emissions (metric tonnes)
	DIC Fine Chemicals Private Limited	Used variable frequency drives (VFDs) in cooling water circulation pumps	543	31
	DIC Fine Chemicals Private Limited	Switched to LED lighting	659	38
Asia-Pacific	DIC India Ltd.	Changed fuels used	640	44
Asia–Pacific region	DIC Compounds (Malaysia) Sdn. Bhd.	Promoted in-house energy conservation measures	853	49
	DIC Graphics (Thailand) Co., Ltd.	Switched to LED lighting	504	29
	Siam Chemical Industry Co., Ltd.	Automated control of cooling water pumps	698	40
	DIC Europe GmbH (Austria Branch)	Promoted in-house energy conservation measures	1,116	64
Americas and Europe	DIC Imaging Products USA, LLC	Eliminated superfluous pumps	1,434	83
	DIC Imaging Products USA, LLC	Operated compressors	372	22
	Qingdao DIC Liquid Crystal Co., Ltd.	Improved insulating materials used, optimized processes and reduced catalyst density	7,326	439
	Qingdao DIC Liquid Crystal Co., Ltd.	Brought high-efficiency production equipment on line	1,124	66
	Zhongshan DIC Colour Co., Ltd.	Promoted energy conservation measures for water cooling equipment	1,229	71
Creater	DIC Synthetic Resins (Zhongshan) Co., Ltd.	Modified water pipes and adopted booster pumps	678	39
Greater China	Nantong DIC Color Co., Ltd.	Reduced heat loss by improving the insulating performance of pigment-related equipment	709	43
	Nantong DIC Color Co., Ltd.	Reduced energy consumption by modifying equipment used in the formation of red pigments	481	28
	Lidye Chemical Co., Ltd.	Changed frequency of 20-HP return cooling water fan	535	31
	DIC Zhangjiagang Chemicals Co., Ltd.	Recovered waste heat (steam) from incinerators	6,124	367

### **Energy-Saving Initiatives Overseas**

Laws and regulations, as well as infrastructure, differ between countries and regions. The DIC Group strives to promote energy savings and efficient operations wherever it is active and in so doing sets precedents for the global chemicals industry.

DIC Group companies overseas continue to implement a broad range of energy-saving initiatives. In fiscal year 2016, the total number of such initiatives rose to 72. Thanks to these initiatives, CO<sub>2</sub> emissions by overseas Group companies amounted to 1,872 metric tonnes, down 0.4% from fiscal year 2015. In fiscal year 2017, DIC and DIC Group companies overseas will step up cooperation with the aim of contributing further to efforts to curb global warming.

### Results of Energy-Saving Initiatives Overseas in Fiscal Year 2016

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Region	Number of initiatives	Reduction in energy consumption (kl)	Reduction in CO <sub>2</sub> emissions (metric tonnes)
Greater China	29	20,164	1,194
Asia–Pacific region	34	7,099	419
Americas and Europe	9	3,545	204
Total	72	30,808	1,817

### Asia–Pacific Region

In the Asia–Pacific region, which accounts for 19% of the CO<sub>2</sub> emissions of the DIC Group, energy officers from 19 sites in 11 countries gather every other year for a conference focusing on energy management issues and progress with energy-saving plans. (The conference is an annual event held in collaboration with DIC Group companies in the PRC, with the location alternating between the two regions.)

In October 2016, a regional ESH country head meeting was held at the office of DIC Asia Pacific Pte Ltd in Singapore. The purpose of the meeting was to explain the Group's fiscal year 2017 policies for helping to combat global warming and reduce carbon, and to determine action plans for the period. As part of its efforts to ensure achievement of the CO<sub>2</sub> emissions target set for the global DIC Group, DIC assisted Group companies in the Asia–Pacific region by implementing energy-saving plans; promoting energy-saving analysis activities; preparing and distributing practical energy management manuals and best practice case study materials translated into local languages, in line with its goal for the foreseeable future of encouraging practical use and retention; and the launch of and provision of support for energy-saving and carbon reduction projects at principal sites.





Asia-Pacific Senior ESH Managers' Conference in Energy-saving analysis activities (Malaysia) Singapore



### TOPIC

# Project Launched at Kawarang Plant to Explore the Use of Coconut Shells as an Alternative to Coal that Will Help Reduce CO<sub>2</sub> Emissions

As a part of the DIC Group's global environmental management efforts, specialists from the Production Management Department visit production sites in the PRC and the Asia–Pacific region every year to assess progress in the promotion of management systems and follow up on improvements.

Capitalizing on Indonesia's Position as a Coconut Producer to Promote a Unique Breakthrough

One issue that was identified through this process is the considerable amount of  $CO_2$  emissions at the Karawang Plant of Indonesian subsidiary PT. DIC Graphics. A crucial facility for the production of pigments for, among others, inks and coatings for packaging applications, as well as for plastics, the production of which uses a significant amount of energy (for warm air, heating medium and steam boilers) and water (for washing). At present, the facility primarily uses coal, the combustion of which has a high  $CO_2$  emissions factor but which also offers important advantages, notably that it is extremely economical in Indonesia (approximately 1/5 the cost of heavy oil and 1/3 the cost of natural gas) and easy to obtain. Because the Karawang Plant already



Energy-saving guidance at Karawang Plant

accounts for close to 10% of CO<sub>2</sub> emissions by the global DIC Group, and because the facility's production volume continues to rise sharply, reducing energy consumption and finding low-carbon fuel sources is a critical challenge. To this end, the Production Management Department, the Pigments Product Division and the Karawang Plant kicked off a CO<sub>2</sub> emissions reduction project that has focused on exploring low-carbon alternatives to coal. One particularly promising candidate identified by the project was coconut shells, which are left over after the extraction of coconut oil and other products. Because Indonesia is the world's second-largest producer of coconut oil, coconut shells are easy to secure in large quantities. Japan currently imports coconut shells as part of an effort to replace a portion of fuel used in coal-fired electric power generating facilities with biomass.

Taking into account the fact that the calorific value of coconut shells, approximately 5,000 kCal/kg, is comparable to that of the coal used by the Karawang Plant, in December 2016 the team began conducting combustion tests using a mixture of coal and pulverized coconut shells in various ratios, as a result of which it confirmed that a mixture of up to 80–20 could be used with no impact on the operation or combustion or on incinerated ash, which is used as an aggregate in cement. The Karawang Plant has set a target period during which it plans to continue testing a 90–10 mixture. DIC estimates that replacing 10% of the coal used by the plant with coconut shells would facilitate a reduction in annual global CO<sub>2</sub> emissions by the DIC Group of approximately 10%, a decrease of 5.6% in the Asia–Pacific region as a whole and of 1.0% in Indonesia). In fiscal year 2017, the emphasis of the project will shift to practical implementation, with a view to increasing the coconut shell content once use of the combined coal–coconut shell fuel is on track.



Mr. Jusof, president of PT. DIC Graphics (fifth from right); Mr. Sigihanto, general manager of the Karawang Plant (fourth from right); Mr. Oos, senior manager of facilities (third from right); Mr. Yogie, senior manager of utilities (fifth from left); and Mr. Yamada, advisor (fourth from left)



Karawang Plant boiler



Coconut shells to be used as fuel

# Reducing $CO_2$ Emissions by Installing New Solar Panels (Siam Chemical Industry Co., Ltd.)

Siam Chemical Industry in Thailand manufactures and sells a broad range of polymer products, including acrylic, amino and polyurethane resins, and has seen a sharp increase in demand for acrylic coating resins, underpinned by increases in automobile production. The use of renewable energy is attracting considerable attention, thanks to, among others, tax breaks offered by the Thai government. Against this backdrop, in fiscal year 2016 the company installed new solar panels with a combined capacity of 704 kW (annual output: 1,048,500 kWh) to produce electric power for its own use. The new facility is expected to commence operation in late July 2017.



Siam Chemical Industry (Thailand)

**ESH** 

#### PRC

In the PRC, which accounts for 10% of the DIC Group's global CO<sub>2</sub> emissions, energy directors from 16 sites across the country gather every other year for a conference focusing on energy management issues and progress with energy-saving plans. (The conference is an annual event held in collaboration with DIC Group companies in the Asia–Pacific region, with the location alternating between the two regions.)

In November 2016, approximately 40 individuals, including two ESH officers from the Asia–Pacific region, participated in a joint ESH conference, which was held at Nantong DIC Color Co., Ltd. The conference focused on the Group's fiscal year 2017 policies for helping to combat global warming and reduce carbon and set CO<sub>2</sub> emissions targets for Greater China. Participants also gave presentations introducing case studies and plans for future initiatives. The objective of the conference is to provide information on successful energy management and energy-saving efforts to help enhance the capabilities of other companies. Gatherings have thus had a positive ripple effect, which includes encouraging other companies to deploy measures based on the experiences of other Group companies.

Efforts have started recently in the region to check on the progress of energy management and the performance of energy-consuming equipment among Group companies. As part of these efforts, site employees known as energy-saving masters confirm energy-saving promotion frameworks, assess energy consumption, formulate policies and manage goals, and evaluate the performances of key equipment. They also create radar charts to clarify strengths and weaknesses and thereby encourage improvements. These efforts will continue in fiscal year 2017.



ESH conference held at Nantong DIC Color in November 2016 (Participants included production facility general managers and management-level energy directors)

Energy conference for Group companies in the PRC and the Asia–Pacific region (PRC)

### Switching from Light Oil to Biomass Boilers (Hainan DIC Microalgae Co., Ltd.)

Hainan DIC Microalgae, DIC Group company DIC Lifetec Co., Ltd.'s Spirulina production facility in the PRC, produces Spirulina, which is attracting attention as a superfood, and Spirulina-derived natural food colorings. Until recently, the facility used light oil boilers to produce steam, which is necessary for its production processes. In October 2016, the company replaced its light oil boiler with a biomass boiler fueled with waste rubber tree timber from forest thinning. This move resulted in a 1,250-metric tonne reduction in the facility's annual CO<sub>2</sub> emissions, 44.0% lower than the company had estimated. This initiative also accounted for a 1.8% reduction in the Group's annual CO<sub>2</sub> emissions in Greater China.



Biomass boiler

Hainan DIC Microalgae's general manager, Hideyuki Tsuda

# Slashing Refrigerator Power Consumption by Optimizing Equipment at DIC Synthetic Resins (Zhongshan) Co., Ltd.

Refrigerators account for 30% of the electric power consumed by DIC Synthetic Resins (Zhongshan)'s metal carboxylates plant. This is primarily because cooling water is supplied by remote motors and water supply pumps operate at full capacity when refrigerators are running. To ensure efficiency, in May 2015 the company kicked off a project to review processes and equipment and explore improvements. This resulted in the installation of a cooling tower and water pump near refrigerators to recirculate cooling water. The company also identified a way to link refrigerator compressors with ice water pumps, facilitating the automatic adjustment of water temperature. Full-scale operations with the new setup, which is expected to slash annual power consumption to around 120,000 kWh, from 320,000 kWh at present, commenced in January 2016.





Upgraded cooling tower and water supply pump

### Harnessing Residual Heat from Incinerating Waste Liquid at Resin Varnish Factory at Nantong DIC Color Co., Ltd.

Nantong DIC Color incinerates waste resin varnish at the plant. The waste gas temperature from this process reaches between 700°C and 800°C. The plant installed a heat exchanger to use this heat for showers and hot water in pigment manufacturing processes. This move has cut the facility's annual electricity bill by around Rmb168,000.



New hot water tank (left) and heat exchanger (right) to recycle waste heat

VOICE Manager in charge of efficiency, Production Management Department Kazuo Kawaguchi

ton the DIC Group

The key themes guiding us are "promote steady energy-saving initiatives," "implement measures that take advantage of subsidies" and "use IoT to further reduce energy consumption."

With the adoption of the Paris Agreement, which obliges participating companies to reduce their emissions of greenhouse gases, the onus on companies to take measures to help combat global warming has increased dramatically. One likely outcome of this is the accelerated propagation of regulations governing emissions in countries and regions where such regulations have heretofore been lenient. For companies like DIC, with portfolios heavily weighted toward overseas businesses, it is essential to implement measures in advance to reduce carbon, rather than waiting for regulations to be strengthened. To this end, we view energy-saving analysis efforts, which involve the deployment of energy management and carbon-reducing measures that have proven effective in Japan across the global DIC Group.

In fiscal year 2015, in the PRC and Southeast Asia we saw the enhancement of national and other subsidies and tax breaks offered to companies that have implemented decarburization measures enabling them to meet certain standards. It is important that we create a system whereby local Group companies keep tabs on what subsidies are available and determine application procedures and share this information with corporate headquarters in Tokyo, and work with headquarters to implement appropriate initiatives. We will promote the timely rollout of such a system to overseas sites where doing so is likely to yield substantial benefits.

At the Kashima Plant in Japan, which is the top site in the DIC Group in terms of energy consumption, we have installed power generating facilities that use renewable energy, including a biomass boiler and wind and solar power generation systems, as well as a highly energy-efficient cogeneration system, and have set a target for reducing the amount of energy consumed by the plant of 35%. However, we recognize that to ensure the peak performance of these systems it is important to not take a passive approach, but rather to use IoT to collect and combine various data—including next-day production plans and weather information—to determine the most effective balance. We recognize that there is significant latent potential for reducing energy consumption at the Kashima Plant and will continue working with the Corporate Engineering Department to capitalize on this potential as swiftly as possible. Watch this space!

### The Americas and Europe

In October 2013, the Sun Chemical Group—which has operations in 13 countries in North, Central and South America and 43 countries in Europe—rolled out a new internal Web-based data collecting system called EcoTrack, which facilitates the collection and centralized monitoring of data for key sustainability metrics related to energy, water, waste and safety at 153 sites. In addition to increasing the transparency of site data related to production, energy-saving initiatives and CO<sub>2</sub> emissions, among others, EcoTrack was designed to encourage the sharing of information and the horizontal deployment of measures.

The full implementation of the system across the Sun Chemical Group in fiscal year 2014 greatly increased the visibility of crucial data, which in turn accelerated the cycle of analyzing data, formulating responses and deploying measures, significantly increasing the progress of energy-saving initiatives. Of particular note, the mounting of sensors on production equipment and analysis of resulting data facilitated the calculation of optimum electric power and operating times for individual processes, thereby minimizing wasted power and optimizing production.

In Europe, the Sun Chemical Group continued to actively promote the use of renewable energy. In fiscal year 2016, Sun Chemical Group facilities in Europe used 9,130,000 kWh of renewable energy, 89% of which was accounted for biomass, 9% by wind power and 2% by solar power, which supported a significant reduction of energy consumption and CO<sub>2</sub> emissions.

In fiscal year 2016, the Sun Chemical Group also entered into a comprehensive agreement with a major manufacturer of energy management equipment and systems, which will provide broad-based guidance on management practices and systems for all Sun Chemical Group production facilities, with the aim of further reducing its energy consumption.



Sun Chemical production facilities are promoting energy management by, among others, expanding use of landfill gas (biogas) (United States)



Logo for Sun Chemical initiative aimed at optimizing energy and production processes (United States and Europe)

### 7 Initiatives in Areas Other than Production

In fiscal year 2016, DIC once again promoted efforts in line with Japan's Cool Biz and Warm Biz campaigns, official efforts to reduce electric power consumption by limiting the use of air conditioning in summer and winter through measures such as the introduction of more relaxed office dress codes. The Company also continued to promote efforts aimed at reinforcing employees' awareness of the importance of lowering energy consumption, including replacing superannuated light fixtures and air conditioning equipment in offices and sites with newer, high-efficiency models that satisfy standards set by the ECCJ for its Top Runner program, turning off lights when not needed and implementing mandatory 22°C winter and 28°C summer air conditioning settings.

### 8 *Reporting to the CDP*

The CDP (formerly the Carbon Disclosure Project) is a global nonprofit organization (NPO) that works on behalf of institutional investors worldwide to motivate companies to disclose information on initiatives to combat climate change and key environmental data. The CDP analyzes and evaluates information on strategies, greenhouse gas emissions, reduction targets and actual initiatives reported by approximately 5,500 leading global companies participating in its climate change assessment program, including 500 in Japan, and communicates its findings to said institutional investors. DIC has been reporting to the CDP since 2010.

In 2016, DIC was recognized by the organization for reaching the program's leadership level, receiving high marks for its efforts to reduce its greenhouse gas emissions and its disclosure and earning an overall score of A-, second only to the top score of A. A total of 82 Japanese companies reached the leadership level in 2016, with 22 earning a score of A and 59 a score of A-.

General Manager, Production Management Department Michio Uchiyama

We are working to balance efforts to increase output of high-value-added offerings with the need to reduce carbon.



In October 2016, DIC's Sustainability Committee approved a challenging new goal for fiscal year 2020, namely, to increase output of offerings the production of which requires significant energy while at the same time reducing CO<sub>2</sub> emissions. To achieve this goal will require us to step up both

hard and soft efforts, i.e., to introduce and update equipment and promote energy-saving initiatives. According, in fiscal year 2017 we will implement measures in line with the medium- to long-term roadmap for realizing "low carbonization" set forth in our current medium-term management plan, DIC108, which will be in its second of three years. We will also continue to implement initiatives aimed at ensuring that employees of the global DIC Group recognize the importance of energy conservation to our ability to achieve a balance between corporate growth and sustainability and at motivating them to achieve the targets that have been set.

### Looking Ahead

VOICF

With the goal of deepening understanding of the importance of energy efficiency across the Group, DIC has inaugurated a number of important new initiatives. In Japan, for example, the Company has created a forum for DIC Group energy officers at principal production facilities to meet regularly and established four key themes to guide the efforts of working groups: promote energy conservation; advance joint purchasing of energy on a regional basis (capitalize on the liberalization of electric power and gas industries); enhance electrical technologies to eliminate problems arising from electrical issues; and improve the performance of power systems. Through efforts implemented in line with these themes, the Group will probe deeper into issues of concern to society and foster experts in key areas to further reinforce responsiveness Groupwide.

### Basic Policy and Framework for Promoting Initiatives

DIC's commitment to promoting Responsible Care encompasses initiatives aimed at ensuring safety in logistics, that is, the reduction of chemical risks associated with the distribution of chemicals, and at reducing CO<sub>2</sub> emissions attributable to the transport of its products. Accordingly, the Company sets annual targets and promotes a variety of initiatives.

The DIC Group's logistics configuration—encompassing transport between production facilities, the transport of products to customers and international logistics, among others—previously centered on a dedicated subsidiary, established in 1999, which operated under the direct supervision of DIC. In a bid to rationalize and increase the efficiency of logistics, in fiscal year 2011 DIC transferred ownership of the subsidiary to a partner firm and began outsourcing its logistics. Since then, the Group has worked closely with the partner to improve the safety of and reduce CO<sub>2</sub> emissions from logistics.

With the aim of better responding to social imperatives associated with the transport of chemicals over the medium to long term, in January 2016 DIC combined the logistics components of its various departments to create an independent Logistics Department. As consignor, the new department, which comprises three sections—domestic planning, overseas planning and the global trading group—is charged with formulating logistics policies and promoting efforts to enhance efficiency, as well as with coordinating with partners, that is, third-party logistics (3PL) firms\* providing complete outsourced logistics services, to further enhance safety and reduce environmental impact.



### > Safety Management in Logistics

The firms to which the DIC Group outsources logistics use containers that comply with the Fire Service Act and other transportation laws, as well as with related United Nations' standards. The Group supplies information needed to display labels complying with GHS<sup>\*1</sup> as well as provides safety data sheets (SDSs) and other documentation to ensure safe shipping in Japan and overseas.

In Japan, the Logistics Department cooperates with logistics firms, meeting regularly to discuss measures for improving the safety of both loading and transport work. Members of plant health and safety committees and logistics firms' accident reduction committees attend each others' meetings to exchange information and promote on-site safety improvement initiatives.

The Logistics Department also inspects operations at the offices of logistics partners located onsite at its 20 main domestic production facilities. In fiscal year 2016, inspections were implemented at seven of these offices, after which issues were pointed out and improvements confirmed.

DIC endeavors to maintain and enhance safety by requiring transport personnel to carry Yellow Cards<sup>\*2</sup> to ensure proper responses in the event of an emergency and by meeting regularly with representatives from logistics firms to discuss safety and transportation quality.

\*2 Yellow Cards are part of activities recommended by the Japan Chemical Industry Association (JCIA). The cards contain information about the right actions to take if an accident occurs. It provides contact details to ensure proper responses by transportation companies, firefighters and police officers if an accident occurs during the transport of chemical substances. Transport personnel must carry these cards at all times.



Regular meeting with logistics partners



Yellow Card carried by transport personnel

<sup>\*1</sup> GHS: Globally Harmonized System of Classification and Labelling of Chemicals

### Reducing Greenhouse Gas Emissions Attributable to Logistics

In fiscal year 2016, CO<sub>2</sub> emissions attributable to logistics and energy consumption for the same purpose decreased 1.0%. In contrast, owing to a decrease in the volume of products shipped by truck, which caused the efficiency of truck transport to deteriorate, energy consumption per unit of production attributable to logistics rose 2.0%. In this environment, the volume of products shipped using modes of transport qualifying as "modal shift" rose 8.0%, as shipments by container ship remained level, while shipments by rail climbed 14.0%. Principal factors behind the increase in the volume of products shipped by rail included the combining of lots and the purchase of containers as part of an effort to encourage use of this mode. As a consequence, the DIC Group's modal shift rate was 9.3%, up from 8.5% in fiscal year 2015. The Group will continue to promote modal shift, as well as to explore remedial measures for truck transport, including increasing load factor.

### CO<sub>2</sub> Emissions and Energy Consumption per Unit of Production Attributable to Logistics



## OICE General Manager, Logistics Department Kazuhiko Yamada

We are searching for ways to realize sustainable logistics.



The two rules of transporting chemicals are safety management and legal compliance. In Japan, a critical shortage of qualified drivers has become a serious issue. To ensure the continuity of transport and distribution services, consignors must also make improvements. To this end, we are promoting dialogue with logistics companies, among others, a process that has helped identify a number of issues, including the need to assign assistants to reduce the burden on cargo loaders, minimize standby time and use co-shipping. There are no easy solutions, but I see working to address these issues, taking a medium- to long-term perspective, as one of the Logistics Department's missions.

# **Report on Other Initiatives**

Goals and Achievements of Major Initiatives Evaluations are based on self-evaluations of current progress. Key: \*\*\* = Excellent; \*\* = Satisfactory; \* = Still needs work

Objectives of initiatives	Goals for fiscal year 2016	Achievements in fiscal year 2016	Evaluation	Goals for fiscal year 2017
Report on Responsible Care initiatives and prepare business site reports.	<ul> <li>Reinforce and expand efforts to enhance the DIC Group's performance.</li> <li>Promote ongoing Responsible Care initiatives tailored to local markets.</li> </ul>	<ul> <li>Steps were taken to create a foundation for unifying performance data while ensuring legal and regulatory compliance in different countries and territories.</li> <li>Ongoing Responsible Care initiatives tailored to local markets were promoted.</li> </ul>	***	<ul> <li>Reinforce and expand efforts to enhance the DIC Group's performance.</li> <li>Promote ongoing Responsible Care initiatives tailored to local markets.</li> </ul>
Implement measures for PCBs.	<ul> <li>Maintain system for storing and managing PCBs.</li> <li>Promote the proper disposal of equip- ment containing PCBs.</li> </ul>	PCB waste was collected and stored in an appropriate manner and disposed of in accordance with the practices of the Japan Environmental Storage & Safety Corporation (JESCO).	***	<ul> <li>Maintain system for storing and manag- ing PCBs.</li> <li>Promote the proper disposal of equip- ment containing PCBs.</li> </ul>
Protect the ozone layer.	<ul> <li>Reinforce framework for managing equipment containing CFCs.</li> <li>Continue promoting efforts to avoid the adoption of new raw materials containing specified CFCs.</li> <li>Continue to ascertain the amount of CFCs leaked at domestic DIC Group companies and promote measures to prevent leakage.</li> </ul>	<ul> <li>The adoption of new raw materials containing specified CFCs was avoided.</li> <li>Measures to ascertain the amount of CFCs leaked at domestic DIC Group companies proceeded.</li> </ul>	***	<ul> <li>Reinforce framework for managing equipment containing CFCs.</li> <li>Continue promoting efforts to avoid the adoption of new raw materials containing specified CFCs.</li> <li>Continue to ascertain the amount of CFCs leaked at domestic DIC Group companies and promote measures to prevent leakage.</li> </ul>
Asbestos	Ensure awareness of the potential risks associated with the discovery of asbestos during demolition or when retrofitting equipment and appropriate responses.	Materials containing asbestos, includ- ing insulation, were discovered during the removal of equipment and were removed and disposed of in a legally appropriate manner.	***	Ensure awareness of the potential risks associated with the discovery of asbes- tos during demolition or when retrofit- ting equipment and appropriate responses.
Train raw materials and product safety experts.	<ul> <li>Provide support and direction for efforts to enhance the capabilities of ESH coordinators in Greater China and the Asia–Pacific region.</li> <li>Continue to provide and increase the sophis- tication of education, training and direction.</li> <li>Promote expert-led training for employees regarding laws and regulations.</li> </ul>	<ul> <li>Training for ESH coordinators in Greater China and the Asia–Pacific region was conducted in Japan.</li> <li>In-house training regarding pertinent laws and regulations and business procedures was provided.</li> </ul>	***	<ul> <li>Provide support and direction for efforts to enhance the capabilities of ESH coordinators in Greater China and the Asia–Pacific region.</li> <li>Continue to provide and increase the sophistication of education, training and direction.</li> </ul>

## Quality

### Enhancing Product Quality and Customer Satisfaction

Goals and Achievements of Major Initiatives Evaluations are based on self-evaluations of current progress. Key: \*\*\* = Excellent; \*\* = Satisfactory; \* = Still needs work

Objective of initiatives	Goals for fiscal year 2016	Achievements in fiscal year 2016	Evaluation	Goals for fiscal year 2017
	Firmly establish and promote aware- ness of product quality as essential to upholding a sound operating foundation.	Product quality-related educational initiatives were implemented Groupwide in line with the Group's quality policy.	***	Promote efforts to foster employees who will shoulder responsibility for product quality and customer satisfaction.
Secure product quality.	Promote efforts to secure product quality through collaboration between the Quality Assurance Department and product division quality assurance sections.	The department and sections held regular discussions with the aim of ensuring an ideal quality assurance arm and collaborated to conduct product quality audits at all DIC Group companies in Japan and reinforce quality assurance frameworks.	***	Encourage relevant divisions and depart- ments to cooperate at all stages, from product planning through to shipment, with the goal of providing the products and services that customers and markets seek.

### **Basic Approach**

Along with its Environment, Safety and Health Policy, the DIC Group views the improvement of product quality as a theme that is essential to upholding a sound operating foundation. Accordingly, the Group seeks to ensure every employee shares the sentiment conveyed in its Quality Policy and works continuously to enhance quality and ensure customer satisfaction.

**DIC's Quality Policy** 

"Contribute to the prosperity of customers and society by consistently providing reliable products" (Updated in May 2015)

### > Framework for Implementation

To better leverage its agility and comprehensive capabilities, DIC has established a matrix-like quality management configuration that positions product divisions on the vertical axis and the Technical Administrative Division and Production Administrative Division on the horizontal axis. DIC has also introduced a quality management system (QMS) based on ISO 9001—the International Organization for Standardization's benchmark for such systems—in product divisions and subsequently earned ISO 9001 certification for all of its production facilities. The Company capitalizes on this QMS, as well as on two other management systems, to promote ongoing efforts to enhance quality.

In fiscal year 2015, DIC revamped its quality assurance configuration with the aim of building a stronger consensus between top management and people on the front lines, establishing a framework that enables swift and effective responses to quality issues. The Company is also taking steps to enhance internal quality audits and product quality–related educational initiatives to create a corporate culture focused on ensuring the quality of its products. This configuration divides product quality into two functions: Product quality across the entire DIC Group, which is the responsibility of the Quality Assurance Department, and product-specific quality management, which is overseen by product division quality assurance sections to facilitate prompt and appropriate quality management. By thus dividing Groupwide and product-specific quality management, DIC has positioned itself to advance close communication among these departments and to secure product quality.

The Quality Assurance Department implements regular product quality audits of DIC Group companies in Japan to ensure that quality management is functioning effectively, as well as to lift product quality levels, thereby ensuring customer satisfaction. Overseas, DIC Group companies continue to promote a variety of efforts directed at further reinforcing product quality.



#### Initiatives Aimed at Increasing Customer Satisfaction

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To ensure its ability to provide high-quality products that customers feel secure using, DIC promotes a variety of quality improvement initiatives during product planning, design and development, the procurement of raw materials and sales, giving consideration to the need for effective product stewardship. Meticulous risk evaluation is conducted at the design review stage to guarantee safety. After products are sold, customer and market assessments are gathered and fed back to development departments to facilitate further quality improvements. Looking ahead, with the realignment of its SAP system, DIC will strengthen controls in areas such as product development (including responding to the need for information on raw materials) by promoting communication with technical and other departments.



### 2 New Efforts to Enhance Product Quality-Related Educational Initiatives

Committed to providing safe, secure products that satisfy its customers, DIC recognizes the importance of ensuring that employees maintain a high awareness of quality, as well as a constant commitment to achieving further quality improvements and upholding high quality standards. To this end, the Company provides education regarding product quality to all DIC Group employees at specific times, including through training for those newly promoted. In fiscal year 2016, DIC also began offering training led by external experts in the field for employees involved in quality management. To date, a total of 45 individuals have participated in such training. Going forward, DIC will continue working to establish and promote further awareness of product quality as essential to upholding a sound operating foundation.



Training session

#### **3** *Global Product Quality Initiatives*

All overseas DIC Group companies with production capabilities (excluding those belonging to the Sun Chemical Group) have earned certification under ISO 9001, the International Organization for Standardization's benchmark for quality management systems. DIC will promote efforts to reinforce its global quality assurance capabilities through the implementation of quality audits.

### 4 *Preventing the Recurrence of Problems*

Information on quality problems (complaints and criticisms) that arise is collated and analyzed and then shared across the Group to prevent recurrence. To discover the causes of such problems, the Group employs "why-why analysis" ("*naze-naze bunseki*.") Using why-why analysis in an effort to eliminatie product reject at the production stage, the Hokuriku Plant in Japan has so far succeeded in achieving an 80% reduction from the fiscal year 2010 level. DIC also applies why-why analysis in determining the cause of accidents, an approach that continues to yield solid results.

DIC also publishes Quality News, which provides useful information on quality management and ways to enhance work quality. In addition to being published regularly on DIC's portal site and distributed directly to relevant parties, Quality News is used in employee training.

#### Change in the Number of Quality Problems



Change in the Number of Complaints Received (Base year: Fiscal year 2011 )



Quality News (Issue No. 75, published in April 2016)



# General Manager, Liquid Crystal Quality Assurance Department, Liquid Crystal Materials Product Division, Saitama Plant Kunihiko Kotani , ර

### We are working to add increased value to products.

Ly of the DIC Group

Liquid crystal materials play a significant role in determining the quality of televisions, tablet computers and other devices. My team approaches its work with the aim of finding ways to ensure stable quality, as well as to improve usability, output and other factors that influence performance but cannot necessarily be explained in numbers. From the development stage to the design stage, we help ensure effective supply chain management, improve inspection accuracy and confirm production processes, working closely with other departments toward a common goal.

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3 GOOD HEALTH

-M/•

# **La Human Resources Management**

### Working to Enhance Job Satisfaction

**SDGs** Goal 3, 4, 5, 8and10

#### Goals and Achievements of Major Initiatives Evaluations are based on self-evaluations of current progress. Key: \*\*\* = Excellent; \*\* = Satisfactory; \* = Still needs work

Objectives of initiatives	Goals for fiscal year 2016	Achievements in fiscal year 2016	Evaluation	Goals for fiscal year 2017
	Continue working to assess the state of human rights and labor practices based on the results of voluntary inspections. Promote the creation of a unified policy regarding aerophal systems, evaluation	Assessments at five companies in Japan and overseas revealed no violations of human rights.	**	Enhance awareness of human rights by conducting seminars for management-level employees at DIC's corporate headquarters. Formulate a human rights policy. Conduct voluntary human rights inspections of Group companies in Japan and overseas.
Foster and endorse the advancement	and remuneration for Group company presidents and product division heads in Japan, the Asia–Pacific region and Greater China.	The scope was expanded to include Group company presidents in Japan and overseas and general managers of regional head and general managers quarters.	**	Introduce a unified policy regarding remuneration for management-level employees at DIC and DIC Graphics.
of local staff overseas with the aim of advancing global management.	<ul> <li>Continue to offer training programs for employees and candidates for executive positions at DIC Group companies in Japan and overseas.</li> <li>Promote the hiring of foreign nationals and continue to implement measures aimed at fostering global employees.</li> </ul>	<ol> <li>Training programs were offered for new CEOs of Group companies in Japan and for newly appointed executives at overseas Group companies.</li> <li>A total of 11 foreign nationals were hired. A total of 190 employees took part in training programs designed to foster Japanese employees capable of functioning in global business environments, while the Overseas Trainee Program attracted 18 participants.</li> </ol>	**	Continue to offer training programs for employees and candidates for executive positions at DIC Group companies in Japan and overseas. Continue to implement measures aimed at fostering global employees.
Encourage women in the work- place with the aim of securing a diverse labor force and support- ing diverse working styles.	Enhance measures for advancing the careers of female employees and increase the percentage of new female graduates recruited to 30%-plus.	A total of 800 employees participated in the Women in DIC Forum. A lunch seminar for female employees attracted 85 individuals. A total of 53 new gradu- ates were recruited, of whom 15 (28.3%) were female.	**	Enhance measures for advancing the careers of female employees and increase the percentage of new female graduates recruited to 30%-plus.
Promote the hiring of individuals with disabilities with the aim of securing a diverse labor force and supporting diverse working styles.	Increase the number of employees with disabilities to 2.2% of DIC's total labor force.	As of December 31, 2016, individuals with disabilities accounted for 2.04% of DIC's labor force.	*	Increase the number of employees with disabilities to 2.2% of DIC's total labor force.

### Basic Approach to Human Resources Management

With the aim of being an organization that empowers all employees to reach their full potential, the DIC Group is committed to respecting human rights and eliminating all forms of discrimination and to creating a work environment that embraces diversity. The Group also strives to support a healthy work-life balance for each employee and create a work environment conducive to job satisfaction, as well as to foster local human resources in markets around the world, which it recognizes as essential to ensuring sustainable corporate growth under its current medium-term management plan.

### Respect for Human Rights

The DIC Group supports and adheres to global codes governing human rights, notably the Universal Declaration of Human Rights. The DIC Group Code of Business Conduct, which outlines standards that DIC Group employees are expected to observe, lays down provisions prohibiting human rights violations and requiring respect for diversity—philosophies that are the foundation of the DIC Group's corporate activities. All DIC Group employees are obliged to provide written pledges to abide by the DIC Group Code of Business Conduct and to conduct themselves as stipulated therein. Domestic and overseas Group companies implemented voluntary human rights and labor practices inspections as part of ongoing efforts to prevent issues from arising. The results of these inspections were assessed and no violations were found to exist.

In fiscal year 2010, DIC became a signatory to the United Nations Global Compact (UNGC), pledging its support for the UNGC's 10 principles, which include tenets regarding human rights and labor. The Company continues to implement related initiatives in all areas of its corporate activities to reinforce respect for human rights in the human resources management practices of all Group companies and prevent violations from occurring.

In response to the Modern Slavery Act 2015\*, DIC is reinforcing training regarding supply chain due diligence, cognizant of the issue of human trafficking and the risks it poses to companies with operations in the United Kingdom. The Company also promotes awareness among DIC Group company executives and enhances corporate headquarters' inspection and monitoring structure as part of an ongoing effort to bolster Group management capabilities.

<sup>\*</sup> Under the Modern Slavery Act 2015, an Act of the Parliament of the United Kingdom, companies with operations in the United Kingdom must report on the existence/nonexistence of slavery, human trafficking or other critical violations of human rights in their supply chains, related risks and steps they are taking to address such practices. "Modern slavery" encompasses debt bondage, forced labor and servitude; human trafficking; and exploitation (sexual exploitation, forced organ donation).

### > Building Trust with the DIC Employees' Union

DIC's management and representatives of its employees' union meet regularly with the goal of ensuring healthy industrial relations based on mutual trust. In addition, through labor-management councils and casual management conferences, DIC shares management information and its vision for the future with union representatives and encourages the frank exchange of opinions. A total of 67.6% of parent company employees belong to the DIC Employees' Union. (100% of non-managerial employees are union members.)

### Solution Section Contemporation Section 2017

In line with The DIC WAY, which represents its fundamental management philosophy, and its DIC108 medium-term management plan, the DIC Group has established a global human resources management framework under which Group companies in Japan, the PRC and the Asia–Pacific region are overseen by DIC, while those in North America, Europe, Central and South America, and Africa are overseen by Sun Chemical of the United States.

With the rapid expansion of its global operations, DIC recognizes that fostering human resources and creating an environment that encourages cross-border career advancement and mobility is essential to increasing corporate value. To these ends, since fiscal year 2015 the Company has sought to develop harmonized promotion, personnel evaluation and remuneration systems, the cornerstone of its global human resources management framework for DIC Group companies under its jurisdiction.

Having unified personnel evaluation systems for executives in Japan, the PRC and the Asia–Pacific region, as well as created a management resources database, DIC is promoting systematic efforts to cultivate executives, including introducing specialized management training and systematic training programs. Through such efforts, the Company is striving to create a structure that allows it to cultivate executives that best suit its needs without regard for nationality.

DIC is striving to realize a framework that creates a broader, more level playing field that allows employees with diverse values and skills to exercise their capabilities and uses the same yardstick to evaluate their achievements. By so doing, the Company aims to create work environments that enhance job satisfaction and contribute to the expansion of DIC Group businesses.

		Fiscal year 2014	Fiscal year 2015	Fiscal year 2016
	Male	2,876	2,898	2,653
employees	Female	666	683	660
	Total	3,542	3,581	3,313
	Male	42.2	42.2	41.9
Average age	Female	39.8	40.3	40.6
	Total	41.7	41.8	41.6
Average years of employment	Male	18.2	18.2	17.8
	Female	17.4	17.7	18.5
	Total	18.1	18.1	18.2
New graduates hired	Male	72	75	38
	Female	19	20	14
	Total	91	95	52

### **Basic Personnel Statistics (DIC)**

		Fiscal year 2014	Fiscal year 2015	Fiscal year 2016
		(Fiscal year 2011 hires)	(Fiscal year 2012 hires)	(Fiscal year 2013 hires)
Retention	Male	<b>91.2</b> %	<b>95.7</b> %	<b>91.3</b> %
rate (after	Female	100%	100%	<b>91.7</b> %
unee years)	Total	<b>92.6</b> %	96.5%	<b>91.4</b> %
Separations (voluntary) (number of individuals)	Male	23	37	32
	Female	7	8	8
	Total	30	45	40
Separation rate (voluntary)	Male	0.8%	1.3%	0.3%
	Female	1.1%	1.2%	0.2%
	Total	0.9%	1.3%	0.3%

### Integrating DIC Group Executive Evaluation Systems

The DIC Group has also integrated its evaluation systems for Group company presidents and other executives in Japan and overseas with the goal of encouraging these individuals not only to pursue near-term results for their business units but also to choose management approaches that are optimal for the Group as a whole from both a medium- and long-term perspective. In addition, the Group also integrated its global personnel policies to ensure that remuneration is in keeping with local market levels and individual job responsibilities.

### Securing and Fostering Human Resources

### 1 Ensuring Fair and Consistent Treatment

To ensure that the efforts and achievements of all employees are reflected appropriately in their treatment, DIC has consolidated its numerous employee qualification systems irrespective of job classification and educational credentials. The selection of employees to recommend for qualification is done through screening based on objective standards, thereby guaranteeing equal opportunities for promotion to all motivated, capable employees.

Remuneration and personnel evaluation systems designed to enhance job satisfaction ensure that abilities and achievements are assessed appropriately and reflected in a timely manner in their treatment. Of note, DIC has introduced management by objectives (MBO) into its personnel evaluation system, a goal-setting management tool that promotes both corporate growth and employee development. Results of individual evaluations are fed back in full to employees, including reasoning behind determinations—a transparent process that ensures employees are largely satisfied with evaluation results.



### 2 Fostering Human Resources to Reinforce Front-Line Capabilities and Accelerate Change

Having recognized fortifying its Group organizational capabilities and enhancing the skills of its people as important challenges, DIC has declared the medium-term focus of its human resources development program as being to nurture human resources capable of reinforcing front-line capabilities and accelerating change.

DIC's training system comprises programs in six categories. These programs are based on curricula that emphasize a systematic approach to helping each employee acquire critical skills. In fiscal year 2016, training emphasized the concepts of "global" and "diversity," with training to improve English-language skills expanded and Japanese-language training for non-native speakers and entry-level education for mid-career hires added.



### **DIC Training Programs**

Management- level training	Promote globalization, strengthen/foster the ability of management-level employees to deal with risks	DIC Management School, media training
Global human resources development	Systematic efforts to foster managers and employees of overseas Group companies, enhance the skills of Japanese employees assigned to overseas posts, improve the Japanese-language abilities of employees who are not native speakers	Global Management (preparatory training for employees assigned to overseas posts), Global Challenge Program, Target Global Program (training to enhance English-language communication skills), Effective E-Mailing (training in how to compose e-mails in English), Japanese-language training for employees who are not native speakers
Level-specific training	Education and training to equip employees with the skills to fulfill responsibilities at each level	Qualification-specific training (J, M, S, senior); training tailored to different management ranks
Department- and job-specific training	Education and training to enhance capabilities required by different departments and jobs	Human resources development programs tailored to production departments (Kaizen Skill Improvement Training Program, others), technical departments (training to support the ability to propose R&D themes, others), sales departments (training to cultivate proposal development capabilities, others) and support departments ("why-why analysis" training, others)
On-the-job training	Hands-on training in the workplace to foster employees and cultivate skills	Workplace-specific on-the-job training, domestic technical department trainee program, Overseas Trainee Program, Global Capability Development Program
Self development	Support for employees seeking to enhance their skills	Correspondence courses, e-learning courses, in-house seminar courses, Skype-based English conversation courses, preparatory courses for the TOEIC Institutional Program (IP) Test

### ΤΟΡΙΟ

### Training to Enhance Proposal Development Capabilities

Since fiscal year 2013, DIC has offered a series of courses that focus on cultivating prowess in the area of proposal development, in line with its goal of reinforcing front-line capabilities. In the advanced course, which primarily targets senior manager–level employees, groups of five or six individuals from sales and technical departments form cross-department project teams, which select practical customer-centered themes, formulating solutions to pertinent hypothetical issues and further honing their ability to prepare and present proposals. The course, which lasts nine months, encompasses approaches to development of innovative proposal themes and angles, problem solving and persuasive presentations, among others, with professional business consultants offering advice and guidance at each stage.

Course work is in addition to participants' regular responsibilities, so participants have a lot on their plates, but they find that they are able to apply newly acquired skills almost immediately, greatly improving front-line capabilities. Participants have also used their selected themes to make proposals to actual customers, many of which have reached the verification stage.

### **3** Fostering Global Human Resources

The goal of DIC's Overseas Trainee Program is to foster global human resources by dispatching selected employees to work at a DIC Group company in another country for a specified period, thereby helping them develop a more international mindset, improve their skills and build networks with their colleagues overseas. Under the Reverse Trainee Program, DIC Group companies in Japan welcome employees from overseas Group companies, giving them a chance to deepen their understanding of Japanese culture, commercial practices and business manners. This program also contributes to the globalization of Japanese Group companies and encourages smooth cooperation with overseas Group companies.

In charge of Global HR Planning, General Affairs and HR Department Yuto Fujisawa

#### Oversees Trainee Program Destinations and Number of Employees Dispatched in Fiscal Year 2016

United States	3
India	3
Malaysia	3
PRC	2
Germany	2
Vietnam	1
Thailand	1
Austria	1
United Kingdom	1

the DIC Group

### Diversity: What I learned in India

As a participant in the Overseas Trainee Program, I spent a year working at DIC India Ltd. At first I was taken aback by the many differences between India and Japan, including the relentless 40°C-plus temperatures every day and the crazy traffic conditions, with six cars abreast across three lanes! Perhaps the biggest hurdles I faced on the work front were how fast Indian people speak English and the basically top-down approach. It was also difficult to get local employees—who have different assumptions when it comes to the work

environment—to understand the thinking behind a Japanese-style human resources system. No matter how many times I explained the system, my colleagues would dismiss it as "not up to global standards." Roadblocks such as this were understandably frustrating. I eventually realized that the only way to promote understanding of each other was through discussion, and so I started working to improve my ability to function in English, build trust and learn to argue logically. I also tried to become more tenacious, recognizing this as crucial to earning assent because Indian people love to debate! I still have a ways to go, but after a year here I feel that I have improved in all of these areas. My experience here has also taught me that respecting diversity means not judging business practices and customs as "good" or "bad," but rather having the ability to accept differences and fill in any gaps. It is also the ability to talk to people and bring them around to your point of view on issues you simply cannot concede. I also learned anew that the old adage "no man is an island" really is true. Given the top-down approach in India, the help of your superior is essential to getting things done. Today, my colleagues and I are working as a team with the goal of identifying efficient ways to work.

I really believe in the value of DIC's Overseas Trainee Program as an initiative that will expand the horizons of young employees and contribute to the further globalization of the DIC Group. Looking ahead, I hope that many employees are able to take advantage of this challenging opportunity.

### Promoting Diversity

The DIC Group actively pursues diversity by employing a broad spectrum of individuals without regard to considerations such as gender, nationality, physical limitation or age. The Group works to foster a corporate culture that draws on its understanding and respect for diversity to produce creative ideas and to incorporate the concept of diversity into management, thereby creating workplaces that enhance job satisfaction.

### 1 Hiring Diverse Human Resources

With the objective of securing talented individuals with advanced specialized capabilities, global perspectives and language capabilities, DIC actively promotes the hiring of international students completing undergraduate or graduate studies at Japanese universities; Japanese and foreign nationals completing undergraduate or graduate studies at overseas universities; and experienced mid-career candidates with extensive experience and expertise. At present, 40 foreign nationals work in various capacities at DIC. Fiscal year 2016 new hires included 10 foreign nationals.





#### Number of Foreign Nationals Currently Employed by DIC

Sales positions	Technical positions	Department/ division administration	Posted overseas	Total
4	24	4	5	37



When I began hunting for a job as I was getting ready to graduate, DIC held a recruitment event at my university. I was really impressed by the pleasant atmosphere and by the impression they gave of being emphatically open to hiring foreign nationals. So even though I am not Japanese, there was no uncomfortable pressure on me because of that when I entered the company. My job is in the area of PPS product development and the provision of technical services to customers. My responsibilities currently involve performing comparisons with materials produced by competitors and identifying the causes of quality problems. When I first joined the company, I could read and comprehend the content of various forms and documentation I dealt with, but my spoken Japanese was not so great, so many minute nuances went over my head and I found verbal communication a challenge. My on-the-job training supervisor was so kind and always responded patiently no matter how many questions I asked! Everyone in my department is friendly, too, so I really enjoy working here. I look forward to increasing not only my language skills but also my product knowledge and to playing a useful role in PPS product development.

### Expanding Career Opportunities for Women

In line with its commitment to promoting diversity, DIC implements a variety of initiatives to expand career opportunities for female employees. Since launching a full-scale program with this objective in 2007, the Company has pushed ahead with measures to transform the mindset of all employees and its corporate culture, provide education designed to encourage the drive and determination of female employees and broaden the range of jobs open to women. In fiscal year 2015, DIC established the C3 ("C Cubed") Advisor System, whereby 12 female employees with experience in handling the demands of career and childcare are appointed to advise their juniors who are currently taking childcare leave on ways to maintain an effective balance once they return to work. In fiscal year 2016, the Company held the Women in DIC Forum, an event devoted to the issued of career opportunities for female employees. Approximately 800 employees took part in the forum, evenly divided between women and men, which featured presentations by female executives from a number of Group companies.

Thanks to these and other initiatives, the voluntary separation rate for female employees of the parent company declined to lower than 1% in fiscal year 2016, while average years of employment for female employees exceeded that for male employees. The Company will continue working to broaden the range of jobs open to women, including conducting awareness seminars for employees qualified for executive and managerial positions and studying the introduction of a telework\* system. Through such efforts, the Company aims to boost the percentage of management positions occupied by female employees, with a target of 8.0% by fiscal year 2020 (as of December 31, 2016). DIC will also continue working to expand its recruitment of new female graduates from technical schools and bachelor's and master's degree programs, both sources of talented human resources. DIC has also formulated an action plan based on Japan's Act on Promotion of Women's Participation and Advancement in the Workplace.

\*1 "C<sup>3</sup>" represents the three "Cs" in "childcare" and "career." \*2 Telework is a work arrangement that enables employees to work at home or another remote location using information and telecommunications technologies, eliminating the time and location constraints of traditional work arrangements.

### Initiatives Aimed at Expanding Career Opportunities for Women

	Transform corporate culture and the mindset of management-level employees	<ul> <li>Message from the President</li> <li>Seminars to promote awareness</li> <li>Identical uniforms for male and female employees</li> <li>Training for employees in administrative positions</li> </ul>	
2007	Encourage the drive and determination of female employees	<ul> <li>Seminars to promote awareness among female employees</li> <li>Introduction of role models</li> </ul>	
2007 1 2015	Expand opportunities for female employees	<ul> <li>Assignment of female employees to production and sales positions</li> <li>Inclusion of female employees in regular system of transfers, reassignments and job rotations</li> <li>Increase in number of women hired</li> </ul>	
	Establish systems to support a healthy work–life balance for female employees and encourage the use thereof	<ul> <li>Establishment of systems to support a healthy work–life balance</li> <li>Publication of the Libra work–life balance support guide and introduction of e-learning program for employees taking leave</li> <li>Introduction of system allowing management-level employees to limit the locations to which they will accept transfers</li> </ul>	
2016 and beyond	Further expand support to measures and promote awareness	<ul> <li>Women in DIC Forum</li> <li>Awareness seminars for executives and managers</li> <li>Introduction of telework system under study</li> </ul>	

#### Policy for Advancing the Careers of Female Employees

DIC is committed to creating a work environment in which all employees can fully exercise their abilities. To this end, the Company pledges that female employees shall enjoy equal access to career opportunities as their male counterparts and that no gender-based restrictions or barriers shall be applied.



### ΤΟΡΙϹ

### Women in DIC Forum

In line with its commitment to advancing diversity, on October 20, 2016, DIC held the Women in DIC Forum, which addressed the issue of career opportunities for female employees, at its corporate headquarters in Tokyo. With the assistance of simultaneous interpreters, approximately 400 female and 400 male employees were able to participate in the event from 14 DIC Group sites across Japan. The forum began with opening remarks from DIC's president and CEO. In the first session, four female executives from Group companies gave presentations on their own working styles and those of women in general, while in the second session three female employees in senior positions in the parent company joined the four speakers from the first session for a panel discussion on pursuing a rewarding career as a way to enrich life. Participating female employees reacted positively, with many saying that they had been inspired by the four female executives. DIC will continue to promote initiatives like this with the aim of being a company that empowers female employees.

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### 3 Advancing the Employment of Individuals with Disabilities

DIC is committed to creating inclusive work environments that help individuals with disabilities enjoy active and fulfilling careers. One initiative, which began in fiscal year 2015, is an internship program, organized in collaboration with a facility providing support for individuals with intellectual disabilities, designed to transition into part-time employment. At the beginning of fiscal year 2017, three program participants were offered clerical positions.

As of December 31, 2016, individuals with disabilities accounted for 2.04% of DIC's total labor force, in line with Japan's legally mandated quota of 2.0%. Going forward, DIC will continue striving to enhance work environments and increase workplace accessibility with the aim of lifting this figure to 2.2% by fiscal year 2018.



### **4** *Reemployment after Retirement and Support for Retirement Planning*

DIC has deployed a system that facilitates the reemployment until age 65 of individuals reaching retirement age (60) and wishing to remain with the organization. With available options including full-time work, short-time work and work sharing, this system enables reemployed individuals to maximize their experience and make full use of their accumulated technological capabilities and specialized expertise, thereby contributing to sustainable growth for the DIC Group and the training of subsequent generations.

DIC also offers classes for employees within a year or retirement that helps them prepare for life after their careers. These classes provide assistance with retirement planning, provide education regarding the national pension system and offer retirement lifestyle simulations.

#### Number of Reemployed Individuals

	Fiscal year 2014	Fiscal year 2015	Fiscal year 2016
Number of retirees (A)	39	126	108
Individuals seeking reemployment	28	104	92
Number of individuals reemployed (B)	27	97	91
Reemployment rate (B) / (A)	<b>69.2</b> %	<b>77.0</b> %	<b>84.3</b> %

### Initiatives that Support a Healthy Work–Life Balance

DIC views work-life balance as essential to both self-realization and sustainable corporate growth. Accordingly, the Company encourages employees to seek both a satisfying work life and a fulfilling life outside work, creating a positive cycle that yields value-added results.

#### Enhancing Programs that Help Employees Balance the Demands of Work and Home

In 1986, DIC blazed a trail for chemicals manufacturers in Japan by implementing a childcare leave program. Having established work and childcare balance support programs that exceed legal requirements in 2007, the Company continues promoting measures that make it easier for employees to make use thereof. In fiscal year 2008, the Company acquired the Kurumin Mark, which recognizes companies that promote initiatives designed to assist employees in raising children. DIC has also deployed a system that gives regular employees the option to accept or refuse transfers requiring relocation. In 2012, the Company established a system that allows management-level employees to limit the locations to which they will accept transfers, making it easier for individuals who are unable to accept transfers that involve relocation because of childbirth, childcare, nursing care or other responsibilities.

In Japan, the social ramifications of falling birth rates and lengthening life spans is an increase in the number of people requiring nursing care. Steps taken by the government to help address these issues include revising the Child Care and Family Care Law in 2016 to make it easier for individuals to take leave or time off and increasing benefits for temporary absences from work. To encourage use and promote knowledge of its leave programs, in fiscal year 2017 DIC published the Childcare and Nursing Care handbook. This was followed up with an employee awareness campaign that began in June 2017.



### Work and Childcare Balance Support Programs

Childcare Leave Program	The maximum length of leave is until the child reaches the age of 2 years and 6 months, which is one year longer than the legally mandated leave period.
Leave to Assist with Parenting Program	Male employees can take five days' paid leave during the eight weeks following their child's birth to assist with parenting.
Childcare While Working Program	Employees can shorten their workday by up to three hours until the end of a child's third year of elementary school. Employees can also stagger their working hours to accommodate childcare schedules.
Economic support system	This system enables employees on unpaid childcare leave to borrow a portion of their bonuses in advance to pay for, among others, fertility treatment or infant care facility fees.
Return to previous (or equivalent) position	Employees returning from childcare leave must be allowed to return to their previous position or to a position equivalent thereto.
Information sharing to promote program participation	DIC's views on support for work and childcare balance, as well as a guide to its various available systems and how to make use of them, are posted on the Company's website and intranet.
Nursing care leave system	Employees can take such leave for up to one year, exceeding the statutory maximum of 93 days.
Nursing Care While Working Program	Employees not wishing to take leave while providing nursing care can shorten their workday by up to two hours or opt for a system in which they shorten their days by two hours before or after prescribed working hours.
Relocation limitation system	Management-level employees may limit the locations to which they will accept transfers that involve relocating because of childbirth, childcare, nursing care or other responsibilities.

### Number of Employees Using the Childcare Leave and Leave to Assist with Parenting Programs

	Fiscal year 2014	Fiscal year 2015	Fiscal year 2016
Number of employees using the Childcare Leave Program	28	29	35
Number of employees using the Leave to Assist with Parenting Program	63	64	62

#### **Kurumin Mark Certification**



Thanks to the introduction of various systems and the creation of an environment that encourages employees to make use thereof, the percentage of DIC employees who return to work after taking leave is currently 100%. In addition, awareness of the Company's Leave to Assist with Parenting Program among male employees has risen, underscored by the fact that more than 67.4% of eligible employees took advantage of this program in fiscal year 2016.

### 2 Reducing Extreme Overwork and Encouraging Employees to Take Annual Paid Leave

DIC has deployed an electronic system to manage on-site hours, working hours and approved overtime hours. As a measure to prevent extreme overtime, if an employee exceeds the overtime limit agreed to with the employees' union, his or her supervisor is required to submit a report to management confirming the work and reasons for the long hours while also presenting specific measures to ameliorate the situation. This report is also shared with the DIC Employees' Union. DIC encourages employees to take annual paid leave, notably by recommending leave timing at each business site and having employees plan dates for such leave.

### Average Years of Employment (Including Individuals Seconded to Group Companies)



### Average Monthly Overtime Hours Worked and Annual Paid Leave Taken

	Fiscal year 2014	Fiscal year 2015	Fiscal year 2016
Average monthly overtime hours worked per employee	12.2 hours	12.1 hours	12.3 hours
Average annual paid leave granted	<b>19.1</b> days	<b>18.8</b> days	<b>19.1</b> days
Average annual paid leave used	<b>11.0</b> days	<b>11.2</b> days	12 days
Usage rate for annual paid leave	<b>57.6</b> %	<b>59.6</b> %	<b>62.8</b> %

## Caring for Mental Health

DIC takes steps to create environments in which employees can feel secure and works to ensure that its labor management practices comply with legal requirements. The Company places a particularly high priority on caring for psychological and emotional well-being and has established a comprehensive mental health program, engaging an in-house occupational psychologist, encouraging awareness as a way of warding off mental health problems and providing support to ensure a smooth return to work for employees taking leave. Access to counseling from an occupational psychologist has had a particularly positive impact in terms of ensuring employees get treatment and are able to return to work as soon as possible.

DIC has also offered voluntary stress checks since fiscal year 2013. Looking ahead, the Company will continue to promote active, systematic efforts with the goal of preventing mental health disorders in accordance with related legislation passed in Japan in fiscal year 2016.

### Mental Health Initiatives

- Guidance from an in-house occupational psychologist (engaged as an occupational physician since fiscal year 2012)
- Internal and external help desks
- Line-care training\* for supervisors
- Mental health self-checks as a part of training for new employees
- Distribution of Kokoro no Kenko ("Psychological Health") self-check handbook to all employees
- Flexible process to support employees returning to work after taking leave \*Line-care training: Training for supervisors to help them recognize promptly when an employee is unwell and respond appropriately by, for example, recommending guidance or counseling or making workplace improvements.

### Caring for Employee Health

DIC has always analyzed the results of employees' annual physicals and provided assistance to employees for whom lifestyle improvements have been recommended by providing introductions to hospitals and clinics. The Company has also sought to contribute to good health for employees by encouraging the use Spirulina—a noted superfood\* that is manufactured by a DIC Group company—as an ingredient in cooking.

In fiscal year 2016, DIC's Healthcare Office and the Group company responsible for the operation of the employee cafeterias collaborated to develop a new healthy cafeteria menu. The new menu, dubbed DIC Irodori Care + ("DIC Colorful Care"), was launched in February 2017, beginning with the cafeteria at the Company's corporate headquarters in Tokyo, with distinctive signage used to promote recognition and a clear explanation provided of the benefits of menu selections, including reduced calories and low sodium content, provided to encourage use.

DIC will continue implementing measures designed to help ensure the physical and mental health of its employees as part of its commitment to creating a work environment in which all employees can fully exercise their abilities.

The term "superfood" is used to describe standard foods with an excellent balance of nutrients that provide health benefits and foods containing specific nutrients and/or ingredients good for human health.



Kokoro no Kenko ("Psychological Health") self-check handbook







A new healthy cafeteria menu selection
## **Sustainable Procurement**

### Ensuring Extended Supply Chain Functions in a Socially Responsible Manner

SDGs Goal 12

### Goals and Achievements of Major Initiatives Evaluations are based on self-evaluations of current progress. Key: \*\*\* = Excellent; \*\* = Satisfactory; \* = Still needs work

Objective of initiatives	Goals for fiscal year 2016	Achievements in fiscal year 2016	Evaluation	Goals for fiscal year 2017
Promote CSR procurement.	<ul> <li>Continue to work with suppliers to reduce risks in key businesses associated with CSR procurement.</li> <li>Promote the sharing of CSR procurement assessment results and challenges for suppliers used by both DIC and Sun Chemical.</li> </ul>	<ul> <li>As part of an effort to promote awareness of CSR procurement among executives in charge of purchasing in Greater China, joint CSR procurement audits were conducted for six key manufacturers of pigment intermediates and guidance was provided to impart know-how regarding the practical implementation of such audits.</li> <li>DIC began sharing information on the CSR procurement status of manufacturers of raw materials purchased jointly with Sun Chemical in the PRC.</li> </ul>	**	<ul> <li>For raw materials used in core businesses, work with suppliers to minimize CSR procurement-related risks.</li> <li>Based on CSR procurement questionnaire responses, request corrective measures from suppliers in Japan with low self- assessment scores. Conduct more detailed CSR procurement assessments of suppliers in the PRC with the goal of uncovering issues in the supply chain and implementing corrective measures together. Share information pertaining to common suppliers with the Sun Chemical Group.</li> </ul>
	<ul> <li>Continue to conduct CSR procurement assessments for new suppliers and existing suppliers for whom assessments have not yet been completed.</li> <li>Promote CSR procurement assessments for DIC Group company suppliers in Greater China and the Asia-Pacific region.</li> </ul>	<ul> <li>CSR procurement surveys were completed for 116 suppliers, bringing the cumulative number of suppliers for which such surveys have been conducted to 682.</li> <li>Using efforts elsewhere as a reference, key raw materials in core businesses in the Asia–Pacific region were selected, suppliers identified and CSR procurement assessments began.</li> </ul>	***	• For companies overseen by DIC Asia Pacific and DIC (China), use version 2 of the <i>DIC</i> <i>Group Supply-chain CSR Deployment</i> <i>Guidebook</i> to advance awareness of CSR procurement, prioritizing key raw materials in core businesses.

### **Basic Approach to Sustainable Procurement**

Having recognized the increasing importance of addressing global issues related to human rights, climate change and water risk, among others, as social imperatives, the DIC Group promotes socially responsible procurement practices. To ensure its extended supply chain functions in a socially responsible manner, the DIC Group established the DIC Group Universal Purchasing Policy, based on which it also formulated purchasing management regulations, in 2008 and the DIC Group CSR Procurement Guidelines, which clarify issues it expects suppliers to address, in 2009. Using the policy and guidelines, the Group promotes CSR procurement across its supply chain by ensuring that all suppliers implement improvements and initiatives necessary to ensure the sustainability of Group procurement. Group companies in Japan, the Americas and Europe, Greater China and the Asia–Pacific region collaborate to ensure sustainable procurement on a global basis.

## The DIC Group Universal Purchasing Policy

Guided by an action policy established to realize the DIC Group's basic sustainable procurement principles, the Purchasing Department adheres to the following guidelines in dealing with suppliers:

#### Fair and transparent business practices The DIC Group will implement fair and open purchasing activities with suppliers based on global perspectives, without the constraints of conventional commercial customs.

An appropriate purchasing process and building of relationships of mutual trust

The DIC Group, as a good partner for suppliers, will build long-lasting, mutually trusted relationships with suppliers and work together with them for mutual harmony and benefit, while complying with relevant regulations/social norms, domestic and overseas, and pursuing adequate quality and prices.

### Satisfying environmental/safety needs

The DIC Group will take responsibility as an exemplary corporate citizen for environmental affairs, occupational safety, human health and product quality, always take into account changes in society and implement environment-friendly purchasing activities

#### Challenging to the creation of a new value In order to respond at a high level to a new value sought by society, the DIC Group will proactively challenge the creation of such value together with suppliers, with whom the same goal can be shared,

and strive to grow together with them in a sustainable manner.

### The DIC Group CSR Procurement Guidelines

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- Compliance with laws and social norms
- Respect for human rights and consideration for work environments
- Safety and hygiene
- In Promotion of sound business management
- Consideration for the environment
- Information security
- Appropriate quality and safety and improved technologies
- 6 Flexible attitude to ensure stable supplies and respond to change
- Contribution to local communities and society
- Promoting CSR and deploying it in the supply chain

### > Promoting CSR Procurement

Based on the DIC Group Universal Purchasing Policy, and incorporating requirements contained in guidebooks put out by external organizations including the Japan Electronics and Information Technology Industries Association (JEITA), DIC has formulated the DIC Group CSR Procurement Guidelines, a series of requirements pertaining to ESG-related imperatives, including the management of chemical substances in and reduction of the environmental impact of raw materials, as well as respect for human rights across its entire supply chain. With the aim of compelling suppliers to observe these guidelines, the Group conducts assessments and on-site inquiries in accordance with the *DIC Group Supply-chain CSR Deployment Guidebook*. (Version 2 of the guidebook was published in July 2013.) These efforts have proven effective in enabling the Group to reinforce relations with its suppliers.

### > Supplier Self-Evaluations

In accordance with version 2\* of the *DIC Group Supply-chain CSR Deployment Guidebook*, the DIC Group asks suppliers to complete questionnaires, which it uses to ascertain the status of suppliers' CSR procurement practices. The questionnaire further segments the Group's 10 procurement guidelines into 46 issues, including consideration for human rights and the work environment.

\* Version 1 of the *DIC Group Supply-chain CSR Deployment Guidebook* was published in 2009 in Japanese, English and Chinese. Version 2, published in July 2013, includes new sections on conflict minerals and biodiversity, added in response to changing social imperatives.

### > Analyzing the Results of Questionnaires

From November 2013 through December 2016, the DIC Group conducted assessments for 682 suppliers using version 2 of the *DIC Group Supply-chain CSR Deployment Guidebook*, accounting for 90%-plus of its procurement spending. The Group analyzed and assessed questionnaire responses, providing feedback to all 682 suppliers and requesting corrective measures for significant issues through on-site inquiries or written comments.

Cumulative number of suppliers assessed (November 2013-December 2016) Equivalent procurate

Equivalent to 90%-plus of procurement spending







higher on the Group's 5.0-point scale.

### Conducting On-Site Inquiries to Advance CSR

From fiscal year 2011 through fiscal year 2016, the DIC Group conducted on-site inquiries for 55 suppliers. The objective of these inquiries is to help suppliers further their understanding of CSR. In an on-site inquiry, the Group and the supplier confirm the responses provided by the supplier in the assessment questionnaire. Other efforts include introducing examples of Group initiatives designed to advance CSR procurement and realize sustainability.

### Slobal Procurement Initiatives

In fiscal year 2016, procurement departments in Japan, Greater China and the Asia–Pacific region collaborated to conduct CSR procurement assessments for and provide feedback to materials suppliers in core businesses. DIC also conducted on-site inquiries for six suppliers in Greater China, working with these suppliers to fortify their understanding of issues related to local environmental regulations, and of environmental issues in the supply chain related to local legal and regulatory compliance, as well as to implement corrective actions.



On-site inquiry for supplier in Greater China

### Sreen Procurement

With the aim of contributing to a sustainable society across its entire supply chain, the DIC Group formulated the DIC Group Green Procurement Guidelines, which compels suppliers to ensure the stringent management of chemical substances. The Group is also working to develop and release products that have less of a negative impact on the environment and to promote green procurement by manufacturers, as well as to lower the negative environmental impact of materials it procures, and of the packaging, transport, production and engineering thereof, by trimming resources and energy used in, decreasing the weight and extending the useful life span of, and reducing CO<sub>2</sub> emissions from such materials.

### > Conflict Minerals

In compliance with the U.S. Dodd–Frank Wall Street Reform and Consumer Protection Act, which contains a provision requiring companies to report on their use of conflict minerals, the DIC Group published its Basic Policy concerning Conflict Minerals on its global website. This policy outlines the Group's pledge to refrain from using gold, tantalum, tungsten and tin, which are classified as conflict minerals, that is, minerals mined in conditions of armed conflict and abuse in the Democratic Republic of the Congo and its neighboring countries. The policy also states that should any raw materials purchased from third-party suppliers be found to contain conflict minerals, the DIC Group will immediately terminate the procurement thereof. The DIC Group continues to use the Conflict Mineral Reporting Template, created by the Electronic Industry Citizenship Coalition (EICC) and the Global e-Sustainability Initiative (GeSI), to conduct conflict minerals audits across its entire supply chain. As of December 2016, responses had been received for more than 90% of the items currently procured by Group purchasing departments.



DIC's efforts to build win-win relationships with suppliers has enabled it to realize sustainable procurement.



My job is in the purchasing of materials for DIC Group companies in Greater China. I have gained extensive know-how in the area of CSR through in-house training, among others, and have been actively involved in promoting CSR among suppliers. One of the biggest challenges has been finding an easy-to-understand way to explain the need for CSR to suppliers, because it is not easy to fully grasp actual initiatives based on responses to supplier self-evaluation questionnaires. In fiscal year 2016, we conducted on-sight inquires for six suppliers in Greater China. While the standards for these inquiries centered on traditional concerns, namely, quality, cost and delivery, we explained to suppliers the need to give consideration to ESG in advance and secured their understanding. We also exchanged opinions with suppliers regarding CSR initiatives. When we discovered particularly outstanding initiatives being implemented by suppliers, as well as when we felt suppliers' understanding of CSR fell short, we introduced DIC initiatives as case studies. This has allowed us to build win–win relationships with suppliers that I am confident will underpin sustainable growth for all concerned going forward.

## Susiness Models that Respond to Social Imperatives

### **Cultivating Next-Generation Businesses**

SDGs Goals 8, 9, and 11

### Goals and Achievements of Major Initiatives Evaluations are based on self-evaluations of current progress. Key: \*\*\* = Excellent; \*\* = Satisfactory; \* = Still needs work

Objectives of initiatives	Goals for fiscal year 2016	Achievements in fiscal year 2016	Evaluation	Goals for fiscal year 2017
Propose solutions-oriented	With the aim of creating next-generation businesses, enter new markets and promote the development of products that integrate multiple technologies to propose solutions that capitalize on the Group's supply chain.	Efforts to enter new markets progressed steadily. Examples include materials that lower the weight of automotive compo- nents, helping to reduce vehicles' CO <sub>2</sub> emissions and for high-performance packaging materials that help ensure food safety.	***	With the aim of creating next-generation businesses, strengthen cooperation with external organizations to accelerate business expansion on a global scale.
businesses that respond to social imperatives.	Participate in trade shows for key customer industries in Japan and overseas to strengthen the DIC brand. (Examples: FINETECH JAPAN and Tokyo Pack)	Participated in major trade shows in Japan and overseas, including Tokyo Pack 2016 (Tokyo), Touch Taiwan 2016 and various display-related events in the PRC. Group companies in the PRC also staged private exhibition for local and overseas automakers.	***	Participate in trade shows for key customer industries in Japan and overseas to strengthen the DIC brand.

### > Responding Accurately to the Changing Needs of Society

In light of the expansion and increasing severity of environmental issues and other key social imperatives, expectations that companies will help contribute to the resolution of related problems are growing, the DIC Group's approach is to swiftly gain insights into concerns shared by its stakeholders and to offer appropriate solutions. While the starting point of these efforts is listening to the voices of its customers—an approach known as "customer in"—the Group also takes a "market-in" approach, paying heed to the importance of anticipating social imperatives.

### > Promoting Businesses that Respond to Future Social Imperatives

One of the central strategies of the DIC Group's current medium-term management plan, DIC108, is to create next-generation businesses. The Group is responding to this challenge through the cultivation of business models that address social imperatives.

For example, one of the principal objectives behind efforts to expedite the development of electric vehicles (EVs) is the need to address increasingly crucial issues such as global warming and the depletion of fossil fuels. However, the practicality of EVs depends on resolving a number of key technological challenges, notably increasing the capacity of storage batteries and developing new power semiconductors, battery charging devices. The DIC Group conducts tireless research aimed at addressing such technological challenges, and is developing innovative materials and systems for storage batteries, power semiconductors and sensors, among others, that will yield concrete, viable solutions, thereby contributing to sustainability. The Group will continue to promote business activities with roots in the needs of society with the aim of further evolving its business models.

### **Examples of Optimized Business Models that Respond to Social Imperatives**

### 1 Linablue<sup>®</sup> Natural Blue Food Coloring: Contributing to Food Safety

The DIC Group's health foods business centers on Spirulina, a cyanobacteria rich in vitamins and minerals that contributes to a balanced diet. Spirulina also absorbs CO<sub>2</sub> as it grows, thus helping to reduce CO<sub>2</sub> in the air. The Group also produces and markets *Linablue*<sup>®</sup>, a Spirulina-derived natural blue food coloring that is the only natural food coloring that has been approved as safe by regulatory authorities in the United States and Europe, as well as Japan. The Group will continue to actively promote the expansion of markets for *Linablue*<sup>®</sup> as a product that responds to a variety of social imperatives.



#### 2 PASLIM Oxygen-Barrier Adhesive: Keeping Food Fresh Longer

With the aim of realizing more functional packaging materials that help reduce food loss and of contributing to the conservation of packaging resources, DIC developed *PASLIM*, an adhesive that prevents oxygen permeation. The Company continues to promote the development of packaging materials that improve the barrier properties of food packaging with the aim of extending product shelf life, thereby reducing food loss in distribution, retailing and consumption, and conserving packaging resources.



#### **3** *Plastics Products: Safeguarding Lifestyles*

In addition to manufacturing and selling a broad range of plastics products in line with its ultimate objective of safeguarding lifestyles, DIC Group company DIC Plastics, Inc., is an active proponent of environment-friendly business practices, particularly material recycling\*. Among the company's noteworthy achievements is its development of a system for sorting waste plastics, generated during the manufacture of original products, by type and color, which has enabled the company to diversify its lineup of products made with recycled plastics, increasing the volume of such materials it uses and adding value to the products in which they are used. \* Material recycling involves the recycling of material from an original application but in a different form.



### Anticipating Trends and Promoting Efforts to Identify and Cultivate Promising New Markets

With the aim of realizing sustainable growth over the medium to long term, the DIC Group has identified promising new markets arising from social imperatives in six key areas—resources, materials and energy; logistics and industrial equipment; electronic and electrical equipment; pharmaceuticals and medical devices; general consumer products; and construction infrastructure—and is striving to assess its ability to cultivate demand in each. The Group is also working to identify key technologies, as well as to discern technological issues that must be addressed, allowing it to accurately gauge growth and technology development potential and determine which of these markets it will enter. Such efforts have demonstrated considerable demand for building materials that contribute to more energy-efficient, comfortable and healthy homes. Materials that absorb and dissipate heat work to maintain a comfortable room temperature, reducing energy used for heating and cooling. One issue with conventional heat storage agents is oozing and leakage when they change from solid to liquid form, making the incorporation of such agents into building materials a key challenge. DIC has succeeded in leveraging its proprietary technologies to develop a sheet-form heat storage material that can easily be laminated together with a variety of building materials. The new material exhibited effectiveness in a demonstration project implemented by the New Energy and Industrial Technology Development Organization (NEDO) in fiscal year 2016. DIC is currently in the process of obtaining Japan Industrial Standards (JIS) certification, among others, with a view to gaining wide market acceptance.



Sheet-form heat storage material





Photo courtesy of OM Solar, Inc

### Global Efforts to Expand Business Domains and Cultivate Next-Generation Businesses

The DIC Group currently encompasses 174 companies in 63 countries and territories. The Group classifies its operations into four regional groupings: Japan, where corporate headquarters is located, the PRC, the Asia–Pacific region, and the Americas and Europe.\*

Once it has resolved provisionally to enter a promising new market, the DIC Group sets about clarifying necessary technologies, systems and services, as well as key development themes. Technology and sales departments work together to verify theoretical value and ascertain the appropriate opportunity to enter the market and, bearing in mind its position in the supply chain, aim to create an optimal business model that will enable it to provide innovative solutions to its customers and build a robust business. The Group is taking active steps to reinforce and expand its presence in key Asian markets, which are expected to see significant growth going forward, focusing particularly on core businesses, while at the same time broadening its reach to include emerging economies in Eastern Europe, South America and the Middle East, with the aim of driving further growth. \*Information is current as of December 31, 2016.

### > Enhancing Brand Strength

Established as a manufacturer of printing inks, DIC has expanded its focus, capitalizing on its foundation in organic pigments and synthetic resins to develop a diverse portfolio of products that leverage its wealth of core technologies. Today, the Group supplies products that respond to the needs of customers in a variety of industries, including printing, automobile manufacturing and electronics. In line with its new branding program, launched in fiscal year 2016, the Group seeks to enhance its brand strength through active participation in a trade shows in Japan and overseas that convey the value it provides and the role it plays—which in the period under review included FINETECH JAPAN and Tokyo Pack—and through communication with customers.



The DIC Group's booth at FINETECH JAPAN

### ΤΟΡΙϹ

### DIC Products and Know-How Are Helping Improve the Safety of Thailand's Roads

According to World Health Organization (WHO) statistics published in 2015, the traffic death rate in Thailand was 36.2 people per 100,000, second highest in the world and eight times the rate in Japan. In Japan, one strategy employed to increase traffic safety that has contributed to a reduction of accidents is colored pavement, which improves visibility for drivers. In Thailand, colored pavement has recently been used around airports and in tourist areas, but there have been complaints that not enough has been done to prevent road surfaces from becoming slippery in the rain. DIC Group company Siam Chemical Industry worked with a Japanese-owned formulator to conduct verification tests for a heat-blocking slip-resistant road surfacing material that balances two performance features that have proven successful in Japan, namely, slip-resistance and heat blocking, which is effective in countering the heat island effect and increasing the durability of roads. The company has since begun introducing this material to the Thai authorities. Going forward, Siam Chemical Industry will continue to capitalize on technologies developed by the DIC Group in Japan to help reduce the incidence of traffic accidents in Thailand and eliminate urban heat islands.



## $\infty$ New Technology Development and Value Creation

### Proposing Solutions that Leverage Elemental Technologies

SDGs Goals 9 and 12

USTRY. NNOVATION INFRASTRUCTURE 12 RESPONSELE CONSUMPTION AND PRODUCTION COO

### Goals and Achievements of Major Initiatives Evaluations are based on self-evaluations of current progress. Key: \*\* = Excellent; \*\* = Satisfactory; \* = Still needs work

Objectives of initiatives	Goals for fiscal year 2016	Achievements in fiscal year 2016	Evaluation	Goals for fiscal year 2017
Enhance ability to develop products and technologies that facilitate contribution to a sustainable society.	<ul> <li>Promote collaboration among DIC Group technical departments.</li> <li>Expand the DIC Group's global R&amp;D configuration.</li> <li>Promote the integration of external technologies.</li> </ul>	<ul> <li>Overseas printing ink and polymer technical centers were on track. Collaboration among DIC technical departments bolstered achievements in the PRC and the Asia-Pacific region.</li> <li>A new group was established to promote open innovation and active steps were taken to advance cooperation with external organizations.</li> </ul>	**	<ul> <li>Promote collaboration among DIC Group technical departments.</li> <li>Enhance global R&amp;D configuration</li> <li>Encourage open innovation.</li> <li>Use IT to enhance the efficiency of R&amp;D.</li> </ul>
Promote the development of environment-friendly products and services.	Accelerate the development of low-carbon and other environment- friendly products.	<ul> <li>Newly developed products included environment-friendly water-based flexo inks and LED-UV inks and modified cellulose nanofiber (CNF) epoxy resin.</li> <li>Environment-friendly products accounted for 56% of all DIC Group products.</li> </ul>	**	Accelerate efforts to develop low-carbon and other products and reduce negative impact on the environment.

### > Achieving Sustainable Growth

With the aim of achieving its Color & Comfort by Chemistry management vision, the DIC Group is leveraging its basic technologies, including those in the areas of optics and color, organic molecular design, polymer design and dispersion, as well as its core technologies in such areas as synthesis, compounding and formulation, and surface treatment, to develop high-value-added products. The Group is also building a portfolio of next-generation products and new technologies by integrating technological resources originating across the Group, as well as actively promoting open innovation, to drive sustainable growth.

### The DIC Group's Basic and Technologies and Target Markets



### Developing Next-Generation Products with Compounding Technologies and through Open Innovation



Next-generation products				
	Materials for printed electronics			
Electronics	Heat-resistant and heat-dissipating materials			
	Inorganic nanotechnologies			
Packaging	Gas-barrier materials			
	Next-generation packaging materials			
Healthcare	Health foods Materials for medical devices			
Low carbonization	Algae-derived oils Products with a lower environmental impact			

### > Specific Initiatives and Achievements

The DIC Group is promoting the development and use of clean technologies. The Company is encouraging a shift toward materials with reduced environmental impact—notably energy-saving, water-based and solvent-free materials, as well as materials for the electronics, automotive, packaging and other industries—that improve the environmental performance of the products in which they are used, which it has positioned as environment-friendly products.

### Products for Use in Electronics Equipment

The DIC Group is developing materials that facilitate the reduction of energy consumption, the production of more compact of finished products, and the shortening of processes and reduction of waste in production processes, for finished products. In products for LCDs, the Group expanded sales of new green pigments for wide-gamut color filters, as well as developed and began sample shipments of a highly responsive monomer that shortens production processes for polymer sustained alignment (PSA) LCDs. The Group also commenced full-scale production of TFT LCs for use in LCD televisions. Newly developed products in the area of polymers for electronics materials included a resin for resists used in nanoimprint lithography (NIL), a technology that shows promise as a next-generation semiconductor fabrication process and a phenolic resin binder for sand casting 3D printers. In industrial adhesive tapes, the Group developed an adhesive dot tape that virtually eliminates air bubbles when applied, which was adopted for use by smartphone manufacturers.

### Products for Automotive Applications

In the area of materials for automotive electronic components, the DIC Group developed a new PPS compound that delivers excellent strength and resistance to heat and moisture for which it is currently working to cultivate markets. The Group also developed and commenced sample shipments of a PPS compound for laser direct structuring (LDS), used for forming circuits on 3D molded components. The outstanding heat, moisture and chemical resistance of PPS, together with the design flexibility of LDS, make it possible to integrate multiple components, as well as to reduce component size and weight. These benefits have encouraged use in the manufacture of components not only of automobiles but also for medical devices.

### Products for Packaging Applications

In printing inks for packaging applications, the Group developed and worked to expand sales of a water-based flexo ink that realizes a print quality comparable to that achieved with gravure printing, which it has positioned as a strategic product for the Asian markets, notably the PRC and India. New products in the area of UV-curable printing inks included a series of low-migration inks and a series of high-sensitivity inks that delivers superb adhesion to the print substrate. These inks help reduce VOCs in printing processes, as well as curb the amount of energy required for drying. The Sun Chemical Group also focused efforts on the development of environment-friendly products, including a sheetfed ink for in-mold labeling that does not contain cobalt and mineral oils and a heatset ink with an aromatic hydrocarbon content of less than 1.0%.

Newly developed adhesives for flexible packaging included a highly durable solvent-free adhesive for use in refill packaging for laundry detergent, fabric softener and other products that resists damage caused by package contents. The Group also promoted efforts to commercialize a vapor-deposited reinforcing adhesive that improves the barrier properties of aluminum vapor-deposited films. Among achievements in the area of multilayered adhesive films were sealant films that help curb the deterioration and reduce the loss of package contents, one of which was for lids used in molded retortable food packaging that withstands thermal sterilization under high pressure at temperatures up to 130° C, while another was for use in packaging for pharmaceuticals and cosmetics, both of which contain volatile ingredients and require sealant films that deliver both a superior seal and low adsorption.

### > A Global R&D Configuration that Underpins Product Development

The DIC Group's global R&D bases work as one to promote R&D of new technologies and products. DIC's Technical Administrative Division and Corporate R&D Division cooperate with the R&D components of DIC Group companies around the world. These include DIC Graphics Corporation; the Sun Chemical Group's research centers in the United States, the United Kingdom and Germany; Qingdao DIC Finechemicals Co., Ltd., which conducts comprehensive R&D tailored to market needs in the PRC; and printing inks technical centers (Asia–Pacific region and the PRC), polymer technical centers (Asia–Pacific region and the PRC) and PPS technical service centers (PRC and Germany). In addition, an algae research center in the United States capitalizes on the Group's accumulated expertise as a producer of Spirulina to conduct comprehensive algae-related research in areas ranging from cultivation to practical application.





### > Promoting Environment-Friendly Products

The DIC Group is committed to effective stewardship of the products it provides. (For related information, please see page 57.) Conscious always of the importance of ensuring its products are environment-friendly, DIC promotes the development of products and new technologies that are useful to society and works to increase the weighting of environment-friendly products in its portfolio, by reducing the volume of hazardous substances it uses, focusing on products that are less hazardous and products that facilitate recycling, and realizing safer production processes that generate less waste and use less energy. The Group has established internal rules for designating products "environment-friendly" and works to increase

the weighting of products that have earned this designation in their portfolio. In fiscal year 2016, environment-friendly products accounted for 56% of all products put out by DIC and subsidiary DIC Graphics. The Group also strives to maintain a solid grasp of laws and regulations in different countries and territories, and of trends in environmental measures—thereby ensuring its ability to design products that comply with diverse regulations governing the use of chemical substances in different markets—and conducts environmental assessments on a continuous basis.

For printing inks, adhesives and other products used in food packaging, which the Group supplies to customers around the world, the DIC Group has established a global product stewardship team. The team shares information on regulations and relevant topics from different markets, as well as promotes awareness thereof and provides education. Knowledge thus gained is incorporated into product design and used to produce compliance certificates across the supply chain, which are essential for customers worldwide.

### **Evaluation Sheet for Environment-Friendly Products**

Department:		Prepared by:			repared on:		
Product to be	Evaluated:	Перагей Бу.					
Evaluation Item	Certifying Standards	Description		Average of f	Coefficient α	Subtotal α∙f	
Energy Consumption	Reduction of energy in production, transportation, etc.						
Materials to be Used	Reduction of use of non- renewable materials, non- recyclable materials, etc.						
Hazards	Product with lower toxicity, etc.						
Amount of Waste Generated	Reduction of environmentally concerned substances, etc.						
Remarks:		•					
			Evaluator				

DIC introduced its system for designating environment-friendly products in 2003 and uses a proprietary evaluation sheet to designate products as "environment-friendly."

### Environment-Friendly Web Offset Ink

Although its *Web World SYNERGY* web offset inks, which are used widely in the printing of leaflet inserts and magazines, satisfy certification requirements for vegetable oil–based inks, DIC Graphics continues working to increase the amount of vegetable oil used to enhance the environmental performance of products in this series.

DIC Graphics is also striving to further advance the use of recycled raw materials in these inks, as well as to expand its product ranges in which petroleum-based solvents have been replaced with vegetable oil-derived ingredients. In February 2016, the Group launched *Web World SYNERGY ECORE*, a new series of low temperature-drying web offset inks that help reduce CO<sub>2</sub> emissions attributable to use by customers.



Web World SYNERGY ECORE low temperature-drying web offset inks

### Innovation through Compounding

Building on its fundamental pigment and resin dispersion and formulating technologies, realized through the production of printing inks, DIC has succeeded in combining materials with different properties and performance characteristics to develop groundbreaking products and create new value.

Recent achievements include the PASLIM series of adhesives with oxygen-barrier properties, which represent the "compounding" of polymer- and filler-related technologies, which minimize food deterioration by preventing oxygen permeation while at the same time facilitating the production of films that are thinner and lighter than conventional alternatives. DIC also developed a silica hybrid UV-curable polymer for hard coatings, realized through the compounding of organic and inorganic polymer technologies, for coating optical film. The DIC Group will continue to harness its distinctive compounding capabilities to further transform its diverse technologies into competitive advantages with the aim of driving innovation.



### > Protecting Intellectual Property

Recognizing intellectual property as crucial to competitiveness, the DIC Group vows to respect the intellectual property of other companies. At the same time, guided by an open/closed strategy the Group works to secure intellectual property rights for its own technologies and make use of "black boxing."

In fiscal year 2016, DIC was fourth in a ranking of companies in the chemicals industry in Japan in terms of patent assets owned in a review conducted by an independent firm\*. DIC registers an average of 400 new patents annually. While this is small compared to leading chemicals firms, the Company scored high for its overall scale of its patent assets, underscoring the quality and high profile of the patents it holds. DIC will continue to actively protect its intellectual property portfolio with the aim of ensuring sustainable growth in the years ahead.

Assistant Manager, Polymer Technical Group 5, Polymer Technical Division 1 Takeshi Ibe

We are addressing the challenge of developing next-generation technologies from the perspective of chemistry.



With the trend toward every-higher levels of miniaturization, the resulting sharp increase in fabrication processes and costs has become a key issue for semiconductor manufacturers. DIC's Corporate R&D Division recently developed a resin that is appropriate for resists used in nanoimprint lithography (NIL), a technology that shows promise as a next-generation semiconductor fabrication process. With NIL, control of the unique organic–inorganic hybrid compound structure used facilitates rapid curing and superb etching resistance, significantry streamlining fabrication. We will continue to leverage the wealth of technologies we have amassed as a manufacturer of fine chemicals to address next-generation challenges and promote sustainable development.

## Harmony with the Community and Social Contributions

### Adding Color & Comfort to Lifestyles

SDGs Goals 3 and 4



### **Basic Approach to Social Contribution**

Based on its Guidelines for Social Contribution Activities, established in fiscal year 2009, the DIC Group works to ensure harmony with local communities and individuals through activities aimed at building a strong relationship with society.

### The DIC Group's Guidelines for Social Contribution Activities

In line with its Color and Comfort by Chemistry management vision, the DIC Group will promote social contribution initiatives in three areas: business activities, culture and education, and communities and society.

#### **Business activities**

The DIC Group will offer products and services that contribute to the development of a sustainable society and protection of the global environment from the viewpoint of "CSR through business activities."

#### Culture and education

The DIC Group will engage in activities that will contribute to the development and promotion of culture, the arts, science and education, including fostering next-generation human resources in areas such as the culture of color and chemistry.

#### Communities and society

The DIC Group will strive to coexist harmoniously with local communities to develop a relationship of mutual trust. Moreover, the Group will provide an environment that enables employees to engage in voluntary contribution activities in their respective local communities.

### Examples of Recent Initiatives

#### Publication of the Guidebook for the Universal Color Design–Recommended Color Set

The DIC Group is actively involved in R&D in the area of color universal design (CUD), as well as in expanding public awareness and understanding of CUD's importance. Under the supervision of the University of Tokyo, the Group, in cooperation with the Japan Paint Manufacturers Association, the Industrial Research Institute of Ishikawa and the Color Universal Design Organization, created the Color Universal Design–Recommended Color Set and, in 2013, the published the *Guidebook for the Color Universal Design–Recommended Color Set*. In developing the color set, the organizations capitalized on their particular expertise and verification by study participants with various types of color vision to adjust proposed colors, a process that facilitated the creation of a set of colors that are relatively easy to distinguish regardless of ability to see colors and can be reproduced using printing inks, coatings and digital imaging devices. At AIC 2015 TOKYO, the midterm meeting of the International Colour Association (ACI) in May 2015, Chiba University, the Central Research Laboratories and DIC Color Design, Inc., gave a presentation on issues to consider in printing warnings and other important information on packaging and the results of joint research on the color appearance of red spot colors.

After AIC 2015 TOKYO, the DIC Group and Chiba University's team continued to conduct joint research on the use of color in an aging society. The university gave a presentation on its findings at a meeting of the Color Science Association of Japan in June 2017. As people age, their ability to see colors deteriorates. Accordingly, for elderly people the visibility and legibility of colors in everyday life is as crucial as their aesthetic beauty. It is thus important to ensure that, for example, the printing on road signs is visible at night and that the instructions on pharmaceutical and food packaging is readable if the power goes out because of a disaster, and that signage and brochures are clear in museums, which may use low lighting to prevent damage to works of art. Accordingly, the DIC Group and Chiba University conducted a study of the impact of age and illumination level on the legibility printed materials. Because age reduces the ability to tell the difference between blue and black as a consequence of cataracts and other issues, researchers asked younger and older study participants to evaluate printed samples produced using blue print against achromatic backgrounds. This exercise enabled researchers to confirm differences in what is legible to the young and the elderly and identify color schemes that work under various illumination levels.

Looking ahead, the DIC Group will continue to promote research initiatives that contribute to society and add color to lifestyles.



colors and printed samples

#### Visiting Science Lab Program

In line with the Japanese government's efforts to promote career education initiatives, as well as to help curb a decline in the popularity of science among children, DIC and DIC Graphics conduct visiting science labs at public elementary schools. Through this program, which focuses on, among others, experiments in pigment synthesis and offset printing, the Group seeks to spark children's interest in science and encourage them to realize the close relationship between science and their everyday lives.

The DIC Group's visiting science lab program was nominated and won gold in the 2016 Education Support Grand Prix, sponsored by Tokyo-based Leave a Nest Co., Ltd. The Education Support Grand Prix is the only awards program in Japan that evaluates and recognizes the educational initiatives of companies committed to helping children thrive from both a business and an educational perspective. One of 12 finalists from among 100 companies promoting next-generation initiatives, the DIC Group was selected through a stringent judging process by a jury consisting of leading educators. In explaining their decision, jury members cited measures and systems in place to ensure that the program, the goal of which is purely to contribute to society, continue regardless of operating results, as well as the use of know-how and technologies particular to the DIC Group and benefits for schools, which include the fact that students earn credits as factors behind their decision.



Visiting science lab

The DIC Group's Education Support Grand Prix certificate

# Comment \_\_\_\_\_\_ A model for educational support efforts for B-to-B companies

DIC's visiting science lab program won gold in our 2016 Education Support Grand Prix. DIC's initiative stood out among nominated programs from more than 100 other companies because rather than being an effort centered on advertising potential or boosting sales, it is an initiative that genuinely seeks to contribute to society. This approach earned high marks. Also worthy of praise is the fact that the program instructors who visit schools in the vicinity of DIC sites are trained researchers who do so as part of their regular work duties. Participation in the program is actually factored into employees' performance reviews. DIC's view of the program as a crucial initiative and active steps to position it as such serves as a model for educational support efforts by B-to-B companies. I look forward to DIC continuing to promote efforts that both support education for the next generation and foster the skills of its own employees.



Representative of the jury, Education Support Grand Prix General Manager, Leave a Nest Education Research Institute Daigo Fujita

#### Initiatives Led by the Central Research Laboratories

The Central Research Laboratories offer a variety of programs in such uniquely DIC topics as synthesis and chromatics to the students of local schools. In November 2016, students from nearby Chiba Prefectural Sakura High School were invited to take part in a fashion design workshop that focused on the use of color and included a presentation color universal design. In December 2016, students from Seishin Gakuen High School in Ibaraki Prefecture-a Super Science High School\*-were invited to the Central Research Laboratories to participate in a lab lesson on the theme of "synthesis and craftsmanship." Led by researchers from the facility, the event was conducted in an actual laboratory and featured experiments and a hands-on lesson on the use of state-of-the-art analytical equipment with young researchers serving as lab instructors. In addition to experiments and lessons on the use of equipment, the event also incorporated a career education component, taking time to talk to students about how they became interested in science and the challenges and rewards of being a researcher.



Lab lesson for students of Seishin Gakuen High School

A designation awarded by Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) to senior high schools that implement curricula focused on the sciences and mathematics that goes beyond MEXT's official guidelines with the aim of fostering the next generation of talented engineers and scientists.

#### Kawamura Memorial DIC Museum of Art

The Kawamura Memorial DIC Museum of Art, located adjacent to the Central Research Laboratories in Sakura, Chiba Prefecture, was established in 1990 to publicly exhibit works of art collected by DIC Corporation and its affiliates. In 2017, the museum celebrates its 28th anniversary. As of December 2016, cumulative visitors to the museum had surpassed 2.3 million.

The museum's extensive collection spans numerous genres, encompassing works by Rembrandt; Impressionists such as Monet and Renoir; modern European artists such as Picasso and Chagall; early modern, modern and postwar Japanese artists; and luminaries of late-20th century American art, including Mark Rothko, Cy Twombly and Frank Stella. In addition to its standing exhibit from its permanent collection of more than 1,000 major works, the museum stages special exhibitions several times a year that focus on pertinent literary works and other artifacts that evoke the cultural atmosphere at the time works were created to help visitors better understand the collection. The museum also offers free-of-charge guided tours every day at 2:00 p.m.

Another appealing aspect of the Kawamura Memorial DIC Museum of Art is its location on a lushly forested 10-hectare site alive with seasonal flowers and foliage that has been open to the public since the museum's establishment. The site's 250 cherry trees—10 varieties in total—blossom every spring. In summer, flowers of all colors bloom profusely. Other highlights include the lotus pond at the back of the garden, which was expanded in 2015, and the wooded nature trail that traverses the spacious site.

In a move aimed at promoting relations with the local community and fostering local cultural activities, the museum has established an annex gallery on the museum site that serves as an exhibition space for local amateur artists and is also made available to elementary and junior and senior high schools in the Sakura area for an exhibition of local students' works.

The Kawamura Memorial DIC Museum of Art was also the first museum in Japan to introduce interactive methods originated by the Museum of Modern Art in New York for teaching children about art. To date, a total of 140 schools and more than 10,000 children have taken part in the museum's educational programs, which are offered to entire classes led by teachers.







Verdant garden with terrace

#### Kawamura Memorial DIC Museum of Art

Siam Chemical Industry Earns Fifth Consecutive CSR-DIW Award

In 2016, DIC Group company Siam Chemical Industry was once again presented with a CSR-DIW Award by the Thai Ministry of Industry, the fifth consecutive year it has been so honored. The CSR-DIW Award program was established in 2008 with the goal of raising the global competitiveness of Thai companies. Awards are given annually to companies in recognition of CSR initiatives judged as exceptional from the perspective of seven core subjects defined in ISO 26000, the International Organization for Standardization's standard for social responsibility.

Siam Chemical Industry's CSR initiatives in 2016 included a volunteer clean-up initiative at a support facility for individuals with disabilities located near the company's factory. The approximately 300 employees who took part spent a whole day cleaning the facility, repainting external walls and playground equipment such as swings and seesaws, and improving the facility's garden by pulling weeds and spreading artificial turf. Siam Chemical Industry pledges to continue contributing to Thai society through effective sustainability initiatives designed to benefit local communities.







Employees of Siam Chemical Industry

### Matching Gift Program

DIC has a matching gift program whereby it matches the total amount collected through an annual year-end fundraising drive spearheaded by its employees' union. Funds raised through the 2016 drive and matching gift program were donated to 20 children's homes and facilities providing support for disabled individuals.



DIC employees visit child welfare facility Anzu no le in Hakusan, Ishikawa Prefecture, to present a donation

### Support for Disaster-Hit Areas

DIC donated funds via the Japanese Red Cross Society to assist with recovery efforts in the wake of the April 2016 Kumamoto Earthquake.

## **\*\*** Communication with Stakeholders

### Promoting Disclosure and Communication

### Basic Approach to Promoting Disclosure and Communication

The DIC Group places a priority on communication with its stakeholders worldwide, as outlined in Article 7 of its Policy on Corporate Governance.

### Article 7 (Ensuring Appropriate Information Disclosure and Transparency)

The Company shall ensure transparency and fairness; and in order to gain the correct understanding and trust from stakeholders, shall timely and appropriately disclose information relating to matters such as the DIC Group's management philosophy, management policies, business plans, financial condition and sustainability activities.

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Guided by this policy, the DIC Group communicates with its stakeholders through direct dialogue in the form of, among others, television advertisements, participation in exhibitions, websites and events. By communicating effectively with stakeholders, the Group strives to ensure an adequate understanding of stakeholder expectations and to reflect such expectations in its business activities. The DIC Group is also expanding its awareness of the concept of stakeholder engagement, a key requirement under ISO 26000.

	Ties with customers	Ties with shareholders and investors	Ties with society	Ties with employees	Ties with the media
Basic approach	Build trusting relationships. By incorporating the demands of customers, seek to develop products that enhance customer satisfaction.	Ensure appropriate disclosure and build trusting relationships with shareholders and investors, encouraging both to evaluate DIC as an attractive investment.	Operate in harmony with the community and build positive relationships with local residents that will underpin the long-term sustainability of operations.	Provide workplaces that are conducive to job satisfaction and enable all employees to fulfill their potential. Over the long term, achieve true diversity.	Deepen mutual understanding through effective publicity, advertising and other communications efforts.
Communications tools	Websites     Product pamphlets     Corporate profile     DVDs     DIC Report     Corporate PR film     Television advertisements	Websites     Press conferences     Quarterly results     announcements     Yuka Shoken Hokokusho     (financial disclosure document required     of listed companies in Japan)     Shareholder newsletters     Corporate profile DVDs     DIC Report     Corporate PR film     Television advertisements	Websites     Site reports     Corporate profile DVDs     DIC Report     Television advertisements	<ul> <li>DIC Plaza (in-house newsletter)</li> <li>Intranet</li> <li>DIC Packel Book (in-house Group data file)</li> <li>DIC Report</li> <li>Corporate PR film</li> </ul>	Press conferences     Interviews with journalists     OIC Report     Television advertisements
Opportunities for communication	<ul> <li>Sales activities</li> <li>Participation in exhibitions</li> </ul>	<ul> <li>General shareholders' meetings</li> <li>Results presentations</li> <li>IR conferences</li> <li>IR meetings</li> <li>DIC IR Day</li> </ul>	<ul> <li>Production facility tours</li> <li>Participation in projects involving collaboration among industrial concerns, government bodies and academic institutions</li> <li>Participation in community events</li> <li>Environmental monitoring</li> </ul>	Labor-management councils     Results presentations     for employees     Presentations on the DIC     Group Code of     Business Conduct     Sustainability presentations	Newspapers     Economic publications     Industry publications

### > Ties with Customers

Guided by the basic policy of its medium-term management plan, which emphasizes the focused allocation of management resources in key business domains, in fiscal year 2016 the DIC Group took part in numerous trade shows in Japan and overseas. Such events provided valuable opportunities for the Group to communicate with its customers.

In Japan, the DIC Group participated in the Tokyo Health Industry Show 2016, held in March 2016, exhibiting Spirulina, which continues to attract attention as a superfood. In April, the Group took part in FINETECH JAPAN, where it exhibited TFT LCs, highly thermoconductive insulating adhesive sheets and other products that leverage state-of-the-art technologies. At Tokyo Pack 2016, the Group communicated with customers by exhibiting distinctive product lines that illustrate its three corporate values—"Making it Colorful," "Innovation through Compounding" and "Specialty Solutions"—at a booth designed around the concept of providing innovative solutions to evolving needs. Overseas, the Group participated in trade shows at multiple locations around the world, in such various industries as packaging, rubber, plastics, automobile manufacturing and electronics. These included CHINAPLAS 2016, Paint India 2016, Touch Taiwan 2016, interpack 2016 and the European Coatings Show 2017.

The DIC Group also held private shows introducing Group initiatives and proposing solutions. DIC Graphics held DICG365, a private show in the Kansai region (Osaka), to which it welcomed customers, trading company representatives and brand owners, among others. This followed a successful private show at DIC's corporate headquarters in Tokyo in fiscal year 2015.

On another front, the Central Research Laboratories, a key R&D base located in Sakura, Chiba Prefecture, continued to welcome visitors to its showroom, which features displays illustrating the key role DIC Group products play in everyday life, an approach designed to deepen public understanding of the DIC Group and its operations. In response to requests from sales departments and customers, the DIC Group holds study sessions on its sustainability initiatives as appropriate. In fiscal year 2016, customers of DIC sales departments paid a visit to corporate headquarters, during which time was set aside for a discussion on sustainability issues, enabling DIC to introduce its supply chain, environmental and human rights initiatives, as well as to exchange information with visitors.

On another front, efforts were expanded to provide detailed product information via Group websites. Additionally, the Group responded to customer queries regarding its CSR procurement practices in such areas as environmental safety, social issues and human rights.

As part of its current branding program, the DIC Group introduced new business cards designed in accordance with its Color & Comfort brand slogan. Based on themes drawn from nature and colors chosen from the *DIC Color Guide*<sup>®</sup> Traditional Colors of Japan, Traditional Colors of France and Traditional Colors of China series, the cards seek to enhance communication with stakeholders by using color to encourage conversation.



DIC Graphics' Kansai-region private show (DICG365)



Touch Taiwan 2016

### Ties with Shareholders and Investors

The DIC Group has established a policy for promoting constructive dialogue with shareholders and strives to ensure fair, appropriate and timely disclosure and to communicate closely with shareholders and investors, as well as to raise awareness of its ESG initiatives. Views and concerns expressed are shared with management and incorporated into operations as appropriate.

In fiscal year 2016, the DIC Group sought to enhance communication with the investment community in Japan by holding two results presentations for institutional investors and securities analysts, as well as by participating in investor relations (IR) conferences and IR meetings of various types. The Group also held small-group meetings with the aim of deepening understanding of the DIC108 medium-term management plan. Overseas, the Group held IR meetings and participated in IR conferences organized by securities companies in North America, Europe and Asia to encourage familiarity with its business strategies. Active efforts to advance communication with overseas investors also included 176 one-on-one in-person and telephone meetings.

The Group also sought to provide information to individual investors in fiscal year 2016 by taking part in an IR fair, where it gave a presentation to an audience of approximately 2,000 guests and set up a booth that enabled employees to promote understanding of its operations and ESG initiatives by speaking directly with investors. The Group also provided information tailored to the needs of individual investors via the DIC global website, as well as through conventional mass media, to enhance familiarity with its operations.



Results presentation (February 2016)



IR fair (December 2016)

### > Ties with Society

In addition to the business community, the DIC Group takes steps to enhance communications with ordinary consumers, including students. In fiscal year 2016, the Group deployed the *DIC Color Guide*<sup>®</sup> Event Pack, developed to encourage solo branding initiatives by employees, at sites across Japan.

In July 2016, the Group created a display introducing DIC at the Itabashi Public Library, in Tokyo, the second consecutive year it has done so. The display focused on the Group's efforts to develop environment-friendly products, one of its core sustainability initiatives, as well as on its social contribution efforts, including the Kawamura Memorial DIC Museum of Art.

DIC's calendar for 2017 was honored with a silver award in the corporate calendars category of the 68th All Japan Calendar Competition, sponsored by the Japan Federation of Printing Industries and Japan Printing News Co., Ltd. An annual event, the All Japan Calendar Competition recognizes the best calendars produced by general companies, publishers and printing companies, among others, in terms of printing technology, planning, design, functionality and creativity. DIC will continue working to plan, design and produce innovative original calendars that appeal to stakeholders.

At the Kawamura Memorial DIC Museum of Art's, a concert was held with the aim of introducing the unique vision of Cy Twombly, one of the most acclaimed names in 20th-century American art, through music. The concert, which was attended by 90 people, was held in the Twombly Room, a permanent room for the Twombly works in the museum's collection.

In fiscal year 2016, the Group also launched an ambitious branding program that included airing a new brand advertisement for television, *Kyo wa Nani Iro*? (What Color is Today?). At the same time, the DIC global website was updated to include a dedicated page that introduces branding initiatives and features a new corporate PR film.



DIC's display at the Itabashi Public Library (Takashimadaira, Tokyo)



Award certificate from the All Japan Calendar Competition(2016)

### Communications in the Field of Education

In August 2016, the Central Research Laboratories sponsored a booth at the 6th Chiba Science School Festival, held at the Chiba Institute of Technology. With the aim of supporting the scientific research efforts of high school students, as well as encouraging elementary and junior high school students to take a greater interest in science, the Central Research Laboratories organized its booth around the theme "Hands-On Learning: Color Universal Design and the Extraction of Color," offering students the chance to conduct experiments in the area of RGB, the primary colors of light and differences in how people see color, as well as in the extraction of the natural blue colorant in Spirulina.



6th Chiba Science School Festival

DIC Graphics' Nagoya Branch held a color seminar for students at Nagoya University of the Arts titled "A Basic Understanding of Color

Expression." The seminar covered a variety of topics, including the rudiments of color reproduction, methods of expressing color using conventional printing and digital devices, issues in the area of color communication and the use of traditional colors, as well as introduced color-related initiatives being undertaken by the DIC Group.

### > Ties with Employees

The DIC Group promotes a variety of initiatives to facilitate active communication with its employees around the world. From March through April 2016, the Group conducted an employee awareness survey in Japan, the PRC and the Asia–Pacific region. The Group's in-house newsletter, *DIC Plaza*, which is published in Japanese and English, was revamped in fiscal year 2016 to better reflect the voices of individual Group employees with the goal of enhancing in-house communications. As well as introducing colleagues and Group operations from around the world, the revamped *DIC Plaza* presents comments from a wide range of stakeholders. In addition, a new feature titled "The Front Line of Sustainability" was added with the aim of promoting employee awareness of the Group's sustainability initiatives.

The DIC Group's intranet is another way for DIC to share information with employees worldwide and further understanding of its activities. In fiscal year 2016, a total of 121 items were posted on the intranet.

Senior management also promotes opportunities for direct communication with employees. These include quarterly results presentations for employees given by the president and CEO, executive vice president and executive officers in charge of individual businesses, the goal of which is to enhance understanding of the Group's management strategies and the Group's current operating and financial status.

In November 2016, the Komaki Plant organized a facility tour for employees' families. Planned as part of DIC's ongoing branding program, the event was held as a first practical step toward achieving the plant's goal, which is to create a production site worthy of showcasing to the world, by enabling employees to show their families the plant where they work. Forty-two family members participated in the tour, which included lunch at the employee cafeteria and a visit to the production floor.

DIC's new corporate headquarters building in Tokyo, which was completed in May 2015, boasts an advanced global-standard flexible communications infrastructure. This has created an open, multipurpose space that accommodates a variety of working styles and reinforces relationships among employees.



Results presentation for employees (February 2016)



DIC Plaza in-house newsletter



Facility tour for the families of employees (Komaki Plant)

### > Ties with the Media

DIC is reinforcing efforts to provide information with newspapers, magazines and other media as a means of enhancing its ability to communicate with its many stakeholders, who include its customers and shareholders, investors and local communities. This reflects a conviction that effective, independent publicity and advertising that facilitates objective media coverage is vital to securing stakeholders' understanding of the DIC Group and its operations. In fiscal year 2016, DIC provided the media with information on a variety of key subjects, including new products, operating results, sustainability initiatives and personnel systems. Increased media coverage brought positive responses from stakeholders across the board.

### > External Assessments

In fiscal year 2016, DIC was selected for inclusion in the Dow Jones Sustainability Indices Asia Pacific Index, a leading benchmark for sustainability initiatives in the Asia–Pacific region and part of the Dow Jones Sustainability Indices (DJSI), a global family of indices for socially responsible investment (SRI). This is the second consecutive year DIC has been selected for inclusion.

DIC also reports to the CDP (formerly the Carbon Disclosure Project), which works on behalf of institutional investors to motivate companies to disclose information on initiatives to combat climate change and key environmental data. In fiscal year 2016, the Company received high marks for its efforts to reduce its greenhouse gas emissions and its disclosure, earning an overall score of A-, second only to the top score of A.

Also in the period under review, ProNed Inc., which advises companies on ensuring effective corporate governance, ranked DIC's corporate governance program as Score 1, the top mark that it awards.

With the aim of driving sustainable growth, the DIC Group also participates in a number of the UNGC's SRI/ESG, Supply Chain, Human Rights Due Diligence and Disaster Risk Reduction working groups.



Dow Jones Sustainability Indices

In Collaboration with RobecoSAM 🧆

## DIC Report 2017 and ISO 26000: A Comparison

Core Subjects	No.	Themes	Relevant Page	Relevant Sections/Initiatives
			5–7	A Message from the President
			11	Overview of Materiality Analysis
			37-38	Directors, Corporate Auditors and Executive Officers
			44-46	Sustainability Report
Organizational			47–48	Compliance
Governance	6.2	Organizational governance	49-54	Risk Management
Governance			37-38	Directors, Corporate Auditors and Executive Officers
			99 103–105	Promoting Diversity
			111–113	Business Models that Respond to Social Imperatives
			114–118	New Technology Development and Value Creation
			123-127	Communication with Stakeholders
	633	1. Due diligence	37-38	Ulfectors, Corporate Auditors and Executive Officers
	6.3.4	2. Human rights risk situations	47	The DIC Group Code of Business Conduct
	6.3.5	3. Avoidance of complicity	99	Human Resources Management
Human Rights	6.3.7	<ol> <li>Resolving gnevances</li> <li>Discrimination and vulnerable groups</li> </ol>	103–105	Promoting Diversity
	6.3.8	6. Civil and political rights	106	Reducing Extreme Overwork and Encouraging Employees to Take Annual Paid Leave
	6.3.9 6 3 10	7. Economic, social and cultural rights	119-120	Sustainable Procurement
	010110	o. Fundamental principles and rights at work	123-127	Communication with Stakeholders
			37–38	Directors, Corporate Auditors and Executive Officers
	643	1. Employment and employment relationship	62-68	Occupational Safety and Health, Security and Disaster Prevention
Labour	6.4.4	2. Conditions of work and social protection	84	Reducing Energy Consumption and Enhancing Product Quality through Kaizen Skill Improvement Training
Labour Practices	6.4.5 6.4.6 6.4.7	<ol> <li>Social dialogue</li> <li>Health and safety at work</li> <li>Human development and training in the workplace</li> </ol>	97	Quality
			99–102	Human Resources Management
			103-106	Promoting Diversity
			107-109	Sustainable Procurement
6.5.3 6.5.4 The 6.5.5 Environment 6.5.6			57-62	Promoting Responsible Care/ESH Audits/Occupational Safety and Lower CO2 Emissions
	6.5.3	<ol> <li>Prevention of pollution</li> <li>Sustainable resource use</li> <li>Climate change mitigation and adaptation</li> <li>Protection of the environment, biodiversity and restoration of natural habitats</li> </ol>	69-71	Reducing Discharges of Chemical Substances
	6.5.4		73–75	Reducing Industrial Waste
	6.5.5 6 5 6		76–79	Managing Chemical Substances in Products
	0.0.0		80-92 93-94	Preventing Global Warming Responsible Logistics
			114-118	New Technology Development and Value Creation
			121	Kawamura Memorial DIC Museum of Art
			123-127	Communication with Stakeholders
	6.6.3		45 47–48	Ensuring DIC Remains a Globally Trusted Corporate Citizen with a Proud Reputation The DIC Group Code of Rusiness Conduct/Compliance
	6.6.4	1. Anti-corruption	62	Occupational Safety and Health, Security and Disaster Prevention
Eair Operating	6.6.5 6.6.6	2. Responsible political involvement     3. Fair competition     4. Promoting social responsibility in the	84	Improving Yields by Expanding Use of System to Enhance the Visibility of Energy Consumption
Practices	0.0.0		93-94	Responsible Logistics
		value chain	99 106	Human Resources Management/Respect for Human Rights
	6.6.7	5. Respect for property rights	108-110	Sustainable Procurement
			119	Harmony with the Community and Social Contributions
	6.7.3	1. Fair marketing, factual and unbiased	24-27	Helping to Reduce Vehicle Weight, Improve Fuel Efficiency and Lower CO2 Emissions
		information and fair contractual practices	55-56	Information Security Promoting Personality Cara/Eagur on Product Stawardshin
_	6.7.4 6.7.5	<ol> <li>Protecting consumers' health and safety</li> <li>Sustainable consumption</li> </ol>	57-60 61	Finitioning Responsible Care/Focus on Floduct Stewardship FSH Audits
Consumer	6.7.6	4. Consumer service, support, and	76–78	Managing Chemical Substances in Products
issues		complaint and dispute resolution	96-98	Quality
	6.7.7 6.7.8	5. Consumer data protection and privacy     6. Access to essential services	114-118	New Technology Development and Value Creation
	6.7.9	7. Education and awareness	125	Harmony with the Community and Social Contributions
			3-4	The DIC Group: A Global Powerhouse
			45	Ensuring DIC Remains a Globally Trusted Corporate Citizen with a Proud Reputation
	602	1. Community involvement	47	The DIC Group Code of Business Conduct
Community	0.0.3 6.8.4	2. Education and culture	57 62-65	FOCUS ON Froduct Stewardship Occupational Safety and Health Security and Disaster Prevention
Involvement	6.8.5	3. Employment creation and skills	84	Reducing Energy Consumption and Enhancing Product Quality through Kaizen Skill Improvement Training
and	6.8.6 6.8.7	4. Iechnology development and access 5. Wealth and income creation	96-98	Quality
Development	6.8.8	6. Health	99-100	Human Resources Management
	6.8.9	7. Social investment	105	Reemployment after Retirement and Support for Retirement Planning
			114-118	New Technology Development and Value Creation
			119–122	Harmony with the Community and Social Contributions

## DIC Report 2017 and G4 Sustainability Reporting Guidelines: A Comparison

This report was prepared using the GRI's G4 Sustainability Reporting Guidelines' "In accordance-Core" option.

Sub-Category	DMA/ Indicator	Disclosure	Page(s)
General Standard Disclosures	1		'
	G4-1	Statement from the most senior decision-maker	5–7 (A Message from the President)
Strategy and Analysis	G4-2	Description of key impacts, risks and opportunities	8 (Steady Progress in Strategic Investments), 11 (Overview of Materiality Analysis), 13–14 (Printing Inks), 15–16 (Fine Chemicals), 17–18 (Polymers), 19–20 (Compounds), 21–22 (Application Materials), 23–26 (Special Feature), 44–46 (Sustainability Report), 50–51 (Risk Management)
	G4-3	Name of the organization	3 (The DIC Group: A Global Powerhouse)
	G4-4		12 (The DIC Group's Business Portfolio), 13–14 (Printing Inks), 15–16 (Fine Chemicals), 17–18 (Polymers), 19–20 (Compounds), 21–22 (Application Materials), 114–118 (New Technology Development and Value Creation)
	G4-5	Location of the organization's headquarters	3 (The DIC Group: A Global Powerhouse)
	G4-6	Number of countries where the organization operates	3–4 (The DIC Group: A Global Powerhouse), 144 (Corporate Data)
	G4-7	Nature of ownership and legal form	3 (The DIC Group: A Global Powerhouse)
	G4-8	Markets served	<ul> <li>3-4 (The DIC Group: A Global Powemouse), 12 (The DIC Group S Business Portfolio),</li> <li>13-14 (Printing Inks), 15-16 (Fine Chemicals), 17-18 (Polymers), 19-20 (Compounds),</li> <li>21-22 (Application Materials), 114-118 (New Technology Development and Value Creation)</li> </ul>
Organizational Profile	G4-9	Scale of the organization	<ul> <li>3–4 (The DIC Group: A Global Powerhouse), 12 (The DIC Group's Business Portfolio),</li> <li>13–14 (Printing Inks), 15–16 (Fine Chemicals), 17–18 (Polymers), 19–20 (Compounds),</li> <li>21–22 (Application Materials), 144 (Corporate Data), 6–9 of the Yuka Shoken Hokokusho ("Affiliated Companies")</li> </ul>
	G4-10	Breakdown of employees	100 (Global Human Resources Management), 10 of the Yuka Shoken Hokokusho ("Employees")
	G4-11	Percentage of employees covered by collective bargaining agreements	Japan: 100% of employees belong to a labor union Overseas: Coverage by collective bargaining agreements in each country/ region complies with local laws and regulations
	G4-12	Organization's supply chain	108–110 (Sustainable Procurement)
	G4-13	Significant changes that occurred during the reporting period	NA
	G4-14	Whether/how the precautionary approach or principle is addressed by the organization	49-54 (Risk Management), 57-60 (Promoting Responsible Care) 45-46 (Ensuring DIC Remains a Globally Trusted Corporate Citizen with a Proud
	G4-16	Memberships of associations and national or international advocacy organizations in which the	Reputation), 57 (Promoting Responsible Care), 92 (Reporting to the CDP)
	G4-17	organization participates List of entities included in the organization's consolidated financial statements or	3 (The DIC Group: A Global Powerbouse) 144 (Corporate Data)
		equivalent documents	
	G4-18	Process for drafting the report content and the aspect boundaries	44 (Sustainability Report)
	G4-19	Material aspects identified in the process for defining report content	11 (Overview of Materiality Analysis)
Identified Material Aspects and Boundaries	G4-20	Aspect boundary (within the organization) for each material aspect Aspect boundary (outside the organization) for each material aspect Reasons for any restatements of information provided in previous reports	The Dic Group ranzation" (DIC Group); materiality issues. The boundary to an 22 is     "within the organization" (DIC Group); materiality issues the aspect boundary of which     is "outside the organization" are:         • Reducing impact on the environment         • Promoting occupational safety and health         • Respect for human rights         • Promoting supply chain management (some suppliers are included and initiatives         are reported on)         NA
	G4-23	Significant changes in scope and aspect boundaries	NA
	G4-24	List of stakeholder groups engaged by the organization	123 (Communication with Stakeholders)
Stokeholder Engegement	G4-25	Basis for identification and selection of stakeholders with whom to engage	123 (Communication with Stakeholders)
Stakeholder Engagement	G4-26	Organization's approach to stakeholder engagement	123–127 (Communication with Stakeholders)
	G4-27	Key topics and concerns that have been raised through stakeholder engagement	123–127 (Communication with Stakeholders)
	G4-28	Reporting period	2 (About this Report)
	G4-29	Date of most recent report	2 (About this Report)
	G4-30	Reporting cycle	
Report Profile	G4-31 G4-32	"In accordance" option the organization has chosen	2 (About this Report), 57 (Promoting Responsible Care), 134 (Third-Party Vorification)
	G4-33	Organization's policy and current practice with regard to seeking external assurance for the report	2 (About this Report), 57–60 (Promoting Responsible Care), 134 (Third-Party Verification)
	G4-34	Governance structure of the organization	37–38 (Directors, Corporate Auditors and Executive Officers), 39–43 (Corporate Governance) 45 (System for Promoting Sustainability Initiatives)
	G4-35	Process for delegating authority for the economic, environmental and social topics from the highest governance body to employees	45 (System for Promoting Sustainability Initiatives)
	G4-36	Whether the organization has appointed an executive-level position or positions with responsibility for economic, environmental and social topics	45 (System for Promoting Sustainability Initiatives)
Governance	G4-37	The organization's process for consultation between stakeholders and the highest governance body on economic, environmental and social topics	45 (System for Promoting Sustainability Initiatives)
	G4-38	Composition of the highest governance body	37–38 (Directors, Corporate Auditors and Executive Officers), 39–43 (Corporate Governance), 34–37 of the Yuka Shoken Hokokusho ("Corporate Governance")
	G4-39	Whether the Chair of the highest governance body is also an executive officer	37–38 (Directors, Corporate Auditors and Executive Officers), 39–43 (Corporate Governance), 34–37 of the <i>Yuka Shoken Hokokusho</i> ("Corporate Governance")

Governance	G4-40	Nomination and selection processes for the highest governance body	39–43 (Corporate Governance), Global corporate website (Corporate Governance), Yuka Shoken Hokokusho ("Major Shareholders")	
	G4-41	Report processes for the highest governance body to ensure conflicts of interest are avoided and managed	39–43 (Corporate Governance), Yuka Shoken Hokokusho ("Major Shareholders")	
	G4-42	Report the highest governance body's and senior executives' roles in the development, approval, and updating of the organization's purpose, value or mission statements, strategies, policies, and goals related to economic, environmental and social impacts	45 (System for Promoting Sustainability)	
	G4-45	The highest governance body's role in the identification process	11 (Overview of Materiality Analysis), 44–46 (Sustainability Report), 49–51 (Risk Management)	
	G4-46	The highest governance body's role in reviewing the effectiveness of the organization's risk management processes for economic, environmental and social topics	45 (System for Promoting Sustainability Initiatives), 49–51 (Risk Managemen	
	G4-47	The frequency of the highest governance body's review of economic, environmental and social impacts, risks, and opportunities	49–51 (Risk Management)	
	G4-48	The highest committee or position that formally reviews and approves the organization's sustainability report	45 (System for Promoting Sustainability Initiatives)	
	G4-49	Report the process for communicating critical concerns to the highest governance party	45 (System for Promoting Sustainability Initiatives)	
	G4-51	Remuneration policies for the highest governance body and senior executives/How performance criteria in remuneration policies relates to the highest governance body's and senior executives' economic, environmental and social objectives	43 (Remuneration for Executives), 34–37 of the Yuka Shoken Hokokusho ("Corporate Governance")	
	G4-52	Process for determining remuneration	43 (Remuneration for Executives), 100 (Integrating DIC Group Executive Evaluation Systems), 101 (Ensuring Fair and Consistent Treatment)	
	G4-56	The organization's values, principles, standards and norms of behavior such as codes of conduct and codes of ethics	1 (The DIC WAY), 47 (The DIC Group Code of Business Conduct)	
Ethics and Integrity	G4-57	Internal and external mechanisms for seeking advice on ethical and lawful behavior, and matters related to organizational integrity	48 (Establishing and Operating a Whistle-Blowing System)	
	G4-58	Internal and external mechanisms for reporting concerns about unethical or unlawful behavior, and matters related to organizational integrity	48 (Establishing and Operating a Whistle-Blowing System)	

Specific Standard Disclosures					
	DMA	DMA	11 (Overview of Materiality Analysis)		
Economic					
5 1 5 4	DMA	DMA	11 (Overview of Materiality Analysis), 7 (Growth Scenario and Positioning of DIC108), 5–7 (A Message from the President)		
Economic Performance	G4-EC1	Direct economic value generated and distributed	3–4 (The DIC Group: A Global Powerhouse)		
	G4-EC3	Coverage of the organization's defined benefit plan obligations	73 of the Yuka Shoken Hokokusho		
Market Presence	G4-EC5	Ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation	10 of the Yuka Shoken Hokokusho		
Indirect Economic Impacts	G4-EC7	Development and impact of infrastructure investments and services supported	119 (Harmony with the Community and Social Contributions), Global corporate website (Home page > Sustainability > Harmony with the Community and Social Contributions)		
	G4-EC8	Significant indirect economic impacts, including the extent of impacts	119 (Harmony with the Community and Social Contributions), Global corporate website (Home page > Sustainability > Harmony with the Community and Social Contributions)		
Environment					
	DMA	DMA	<ol> <li>(Overview of Materiality Analysis), 57–60 (Promoting Responsible Care), 61 (ESH Audits), 69 (Reducing Discharge of Chemical Substances), 73 (Reducing Industrial Waste), 76 (Managing Chemical Substances in Products), 80–81 (Preventing Global Warming)</li> </ol>		
Energy	G4-EN3	Energy consumption within the organization	75 (Environmental Impact of the DIC Group's Operating Activities), 80–92 (Preventing Global Warming)		
	G4-EN5	Energy intensity	80–92 (Preventing Global Warming)		
	G4-EN6	Reduction of energy consumption	80–92 (Preventing Global Warming)		
Water	G4-EN8	Total water withdrawal by source	70-71 (Managing Water Resources), 75 (Environmental Impact of the DIC Group's Operating Activities)		
	G4-EN15	Direct greenhouse gas emissions	80–92 (Preventing Global Warming)		
Emissions	G4-EN17	Other direct greenhouse gas emissions	84 (Improving Yields by Expanding Use of System to Enhance the Visibility of Energy Consumption), 94 (Reducing Greenhouse Gas Emissions Attributable to Logistics)		
Emissions	G4-EN18	Greenhouse gas emissions intensity	80–92 (Preventing Global Warming)		
	G4-EN19	Reduction of greenhouse gas emissions	80–92 (Preventing Global Warming)		
	G4-EN21	NOx, SOx, and other significant air emissions	69–72 (Reducing Discharge of Chemical Substances)		
	G4-EN22	Total water discharge by quality and destination	70-71 (Managing Water Resources), 75 (Environmental Impact of the DIC Group's Operating Activities)		
Effluents and Waste	G4-EN23	Total weight of waste by type and disposal method	73–75 (Reducing Industrial Waste)		
Lindents and Waste	G4-EN24	Total number and volume of significant spills	NA		
	G4-EN25	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally	NA		
Products and Services	G4-EN27	Extent of impact mitigation of environmental impacts of products and services	24–27 (Helping to Reduce Vehicle Weight, Improve Fuel Efficiency and Lower $CO_2$ Emissions), 114–118 (New Technology Development and Value Creation)		
Compliance	G4-EN29	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	61 (ESH Audits)		
Transport	G4-EN30	Significant environmental impacts of transporting products and other goods and materials for the organization's operations, and transporting members of the workforce	62 (Occupational Safety and Health and Disaster Prevention), 84 (Improving Yields by Expanding Use of System to Enhance the Visibility of Energy Consumption), 93–94 (Responsible Logistics)		
Overall	G4-EN31	Total environmental protection expenditures and investments by type	Global corporate website (Home page> Sustainability > Environment, Safety and Health (ESH)> Environmental Accounting		
Supplier Environmental	G4-EN32	Percentage of new suppliers that were screened using environmental criteria	108–110 (Sustainable Procurement)		
Assessment	G4-EN33	Significant actual and potential negative environmental impacts in the supply chain and actions taken	108–110 (Sustainable Procurement)		
Environmental Grievance Mechanisms	G4-EN34	Number of grievances about environmental impacts filed, addressed, and resolved through formal grievance mechanisms	NA		

Labor Practices and Decent Work			
Employment	G4-LA1	Total number and rates of new employee hires and employee turnover by age group, gender and region	100 (Basic Personnel Statistics (DIC)), 103 (Hiring Diverse Human Resources)
F - 5	G4-LA3	Return to work and retention rates after parental leave, by gender	105 (Enhancing Programs that Help Employees Balance the Demands of Work and Home)
Labor/Management Relations	G4-LA4	Minimum notice periods regarding operational changes, including whether these are specified in collective agreements	A minimum notice period is provided as specified in labor agreements.
	DMA	DMA	11 (Overview of Materiality Analysis), 58 (Framework for Promoting Responsible Care), 62 (Occupational Safety and Health, Security and Disaster Prevention)
Occupational Health and Safety	G4-LA6	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and gender	65 (Occupational Safety and Health, Security and Disaster Prevention)
	G4-LA8	Health and safety topics covered in formal agreements with trade unions	106 (Reducing Extreme Overwork and Encouraging Employees to Take Annual Paid Leave)
G4-I Training and Education		Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	62–65 (Occupational Safety and Health, Security and Disaster Prevention), 84 (Reducing Energy Consumption and Enhancing Product Quality through Kaizen Skill Improvement Training), 97 (Quality), 99–100 (Human Resources Management), 105 (Reemployment after Retirement and Support for Retirement Planning)
	G4-LA11	Percentage of employees receiving regular performance and career development reviews, by gender and by employee category	101 (Ensuring Fair and Consistent Treatment)
	DMA	DMA	11 (Overview of Materiality Analysis), 99 (Human Resources Management)
Diversity and Equal Opportunity	G4-LA12	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity	37–38 (Directors, Corporate Auditors and Executive Officers), 100 (Global Human Resources Management), 103–105 (Promoting Diversity)
Supplier Assessment for Labor	DMA	DMA	11 (Overview of Materiality Analysis), 108 (Sustainable Procurement)
Practices	G4-LA14	Percentage of new suppliers that were screened using labor practices criteria	108–110 (Sustainable Procurement)
Labor Practices Grievance	G4-LAIS	Significant actual and potential negative impacts for labor practices in the supply chain and actions taken	100-110 (Sustainable Procurement)
Mechanisms	G4-LA16	Number of grievances about labor practices filed, addressed, and resolved through formal grievance mechanisms	NA
Human Rights	1		
Investment	G4-HR2	Total hours of employee training on human rights policies or procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained.	99 (Human Resources Management)
Non-Discrimination	G4-HR3	Total number of incidents of discrimination and corrective actions taken	NA
Freedom of Association and	G4-HR4	Operations and suppliers identified in which the right to exercise freedom of association and collective	99 (Respect for Human Rights) 108–110 (Sustainable Procurement)
Collective Bargaining		bargaining may be violated or at significant risk, and measures taken to support these rights	45 (Respective Human Rights), 100-110 (Castanable Freedoment)
Child Labor	G4-HR5	measures taken to contribute to the effective abolition of child labor	47 (The DIC Group Code of Business Conduct), 109–110 (Sustainable Procurement) 45 (Ensuring DIC Demains a Clobally Trusted Corrorate Citizan with a Proud
Forced or Compulsory Labor	G4-HR6	Operations and supplier identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor	Reputation, 47 (The DIC Group Code of Business Conduct), 98 (Respect for Human Rights), 106 (Reducing Extreme Overwork and Encouraging Employees to Take Annual Paid Leave), 108–110 (Sustainable Procurement)
Security Practices	G4-HR7	Percentage of security personnel trained in the organization's human rights policies or procedures that are relevant to operations	99 (Human Resources Management)
Indigenous Rights	G4-HR8	Total number of incidents of violations involving rights of indigenous peoples and actions taken	NA
Assessment	G4-HR9	Total number and percentage of operations that have been subject to human rights reviews or impact assessments	99 (Human Resources Management)
Supplier Human Rights Assessment	DMA G4-HR10 G4-HR11	DMA Percentage of new suppliers that were screened using human rights criteria Significant actual and potential negative human rights impacts in the supply chain and actions taken.	11 (Overview of Materiality Analysis), 108 (Sustainable Procurement) 108–110 (Sustainable Procurement) 108–110 (Sustainable Procurement)
Society			
Local Communities	G4-SO1	Percentage of operation with implemented local community engagement, impact assessments, and development programs	123–127 (Communication with Stakeholders)
Anti Comunitor	G4-SO3	Total number and percentage of operations assessed for risks related to corruption and the significant risks identified	47-48 (Compliance)
Anti-Corruption	G4-SO4 G4-SO5	Communication and training on anti-corruption policies and procedures Confirmed incidents of corruption and actions taken	47–48 (Compliance) NA
Anti-Competitive Behavior	G4-S07	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes	NA
Compliance	G4-S08	Monetary value of significant fines and total number of non-monetary sanctions for non- compliance with laws and regulations	47 (Compliance ("Eliminate violations of antitrust, anti-corruption and other key legislation."))
	G4-S09	Percentage of new suppliers that were screened using criteria for impacts on society	108–110 (Sustainable Procurement)
Supplier Assessment for impacts on Society	G4-SO10	Significant actual and potential negative impacts on society in the supply chain and actions	108–110 (Sustainable Procurement)
Grievance Mechanism for Impacts		taken Number of orievances about impacts on society filed, addressed, and resolved though formal	
on Society	G4-S011	grievance mechanisms	NA
Product Responsibility	DMA	DMA	11 (Quantian of Materiality Applysic) 96 (Quality)
Customer Health and Safety	G4-PR1	Percentage of significant product and service categories for which health and safety impacts	57 (Focus on Product Stewardship), 96–98 (Quality)
Cusioner nearth and Safety	G4-PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning the	NA
	G4-PR3	Type of product and service information required by the organization's procedures for product and service information and labeling and necestance of significant product and service	76–79 (Managing Chemical Substances in Products), 97 (Initiatives Aimed at Increasing
Product and Service Labeling	04-1103	Tatal number of incidents of poncempliance with regulations and voluntary codes concerning	Customer Satisfaction)
	G4-PR4	product and service information and labeling, by type of outcomes	NA
	G4-PR5	Results of surveys measuring customer satisfaction	96–98 (Quality)
		UMA	11 (Overview of Materiality Analysis), 111 (Business Models that Respond to Social Imperatives)
Marketing Communications	04-PK0	Total number of incidents of non-compliance with regulations and voluntary codes concerning	
	G4-PR7	marketing communications, including advertising, promotion and sponsorship, by type of outcomes	NA
Customer Privacy	G4-PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data	NA
Compliance	G4-PR9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services	NA

## **DIC Group Milestones**

### 1908 **Established** as Kawamura Ink Manufactorv

Established by Kijuro Kawamura as Kawamura Ink Manufactory; adopts the dragon as its product trademark and begins manufacturing inks.



Dragon product trademark



DIC's founder, Kijuro Kawamura

### 1915

Commences production of offset printing inks Becomes one of the first companies to conduct research in the area of offset printing inks and succeeds in producing a viable product in only one year.

### 1925

Begins production of organic pigments Develops production method for organic pigments and begins production for its own use, the first step in its evolution as a fine chemicals manufacturer.

### 1940

**Commences production of** water-based gravure inks

Amid wartime restrictions on use of volatile oils, develops water-based gravure inks-one of several achievements that would later facilitate expansion into synthetic resins.

## 1952

#### Makes full-scale entry into the synthetic resins business

Establishes Japan Reichhold Chemicals Inc., then the second-largest joint venture with an overseas firm in the

history of the Japanese chemicals industry, and makes a full-scale entry into the synthetic resins business.



Reichhold Chemicals' San Francisco plant



### 1957

#### Enters the market for helmets and other molded plastic products

Enters the plastic products business with the aim of becoming an integrated manufacturer with operations encompassing production of everything from plastic raw materials to finished products.

### 1962 **Changes Company name** to Dainippon Ink and Chemicals

Embarks on a new chapter in its history by absorbing Japan Reichhold Chemicals, Inc., and changes Company name to Dainippon Ink and Chemicals Incorporated (DIC).



### 1968

### Commences sales of the

DIC Color Guide® Launches the DIC Color Guide®, which becomes the de facto standard for color selection in numerous industries, bolstering recognition of the DIC name.



Promotes expansion of printing inks business

Diversifies operations by building on base in printing inks, organic pigments and synthetic resins Actively introduces technologies from overseas and promote further diversification

**Sustainability Initiatives** 

### 1973 **Establishes the Environment and Safety**

**Response Department** Creates department under the direct supervision of DIC's president to oversee safety and environmental initiatives (today's Responsible Care Department); creates Environment and Safety Management Regulations and Interim Emergency Countermeasures Department and begins promoting decisive efforts, including the implementation of plant safety inspections.

### 1990

**Opens Kawamura Memorial Museum of Art** Located in Sakura, Chiba Prefecture, adjacent to the Central Research Laboratories; established to exhibit works of art collected by DIC and DIC Group companies; now called the Kawamura Memorial DIC Museum of Art.



#### 1995

Declares intention to uphold the principles of Responsible Care Takes an active role in the Responsible Care movement since the start as one of 74 founding members of the Japan Responsible Care Council (JRCC); reinforces efforts to, among others, reduce negative environmental impact of operations and lower energy consumption.



### 2006

Becomes signatory to the Responsible Care Global Charter Signs the CEO's Declaration of Support for the Responsible Care Global Charter, established by the International Council of

Chemical Associations, as befits its status as a member of the global community of fine chemicals manufacturers.



### 1970

Enters the multilayered films business Establishes Crown Zellerbach Packaging Materials Japan Co., Ltd., in a joint venture with Crown Zellerbach Corporation of the United States and Nippon Kakoh Seishi Co., Ltd., and enters the multilayered films business.

#### 1973 **Enters the** market for LCs

Develops revolutionary high-performance, long-lasting nematic LCs, commencing its evolution into one of the world's foremost manufacturers of LCs.



Nematic LCs

### 1986

Acquires the graphic arts materials division of Sun Chemical Corporation of the United States

Becomes world's largest manufacturer of printing inks in terms of market share and a leading name in the graphic arts materials business.



Sun Chemical's headquarters

### 1999

#### Succeeds in developing 100% soybean oil-based printing ink

Amid rising awareness of environmental issues, develops Japan's first organic solvent-free sheetfed offset ink.

### 1999

#### Acquires Coates, the printing inks division of France's TOTALFINA

Establishes presence in India, Central and South America and elsewhere by acquiring the Coates Group from TOTALFINA S.A., France's largest oil company.

### 2008 **Changes Company name** to DIC Corporation

Marks centennial anniversary by changing Company name to DIC Corporation and adopting a new corporate symbol.



DIC's new corporate symbol

### 2009

**Establishes DIC Graphics Corporation** In October 2009, establishes a joint venture with Dai Nippon Printing Co., Ltd. subsidiary The Inctec Inc. and integrates its domestic printing inks business with the printing inks business of The Inctec.

## 2015

#### **Completes reconstruction of corporate** headquarters in Nihonbashi

In May 2015, completes the reconstruction of its corporate headquarters-the DIC Building-in Nihonbashi, Tokyo, the role of which was expanded to include oversight of the global DIC Group.



DIC Building

### 2016

#### Launches DIC108 medium-term management plan

Sets forth a growth scenario aimed at realizing sustainable growth and outlines what DIC must do between now and fiscal year 2018.

### 2016

#### Introduces branding program

Introduces new branding program based on the Group's "Color & Comfort" brand slogan, which sets forth three corporate values, and in October airs a new television advertisement



Brand advertisement for television

Prepares for a new phase of growth

Seeks to advance globalization of core businesses and diversify into new areas

### 2010

responsible corporate entity.

**Joins United Nations Global Compact** In December 2010, becomes a participant in the United Nations Global Compact, with the aim of maintaining its reputation as a socially

### **Changes designation to** "sustainability"

in a manner that takes into account, among others, the environment, ecosystems and socioeconomic issues, and changes the designation used across its program from "CSR" to "sustainability."



### 2015

Selected for inclusion in the **Dow Jones Sustainability Indices Asia Pacific Index** Included for the first time in the DJSI Asia Pacific Index, a global family of indices for socially responsible investing and a benchmark of global sustainability. Included again in 2016.

#### MEMBER OF **Dow Jones** Sustainability Indices In Collaboration with RobecoSAM 🧠

2007 Launches CSR program

Begins promoting CSR initiatives; identifies fulfilling its responsibilities as a member of society through its business activities and contributing to the evolution of society as the cornerstones of CSR.



# protection and expands global presence

Takes steps to advance environmental

2014

Clarifies its overall policy of achieving sustainability

## **Third-Party Verification**



The DIC Group commissioned SGS Japan Inc. to conduct third-party verification of its data for greenhouse gas emissions, discharge of industrial waste and number of occupational accidents (including number of accidents leading to workdays lost).

## Third-Party Opinion Regarding DIC Report 2017



#### Counselor, The Japan Research Institute, Limited Eiichiro Adachi

In his current capacity, Eiichiro Adachi conducts industry research and assesses corporate performance from the perspective of social responsibility. He also provides financial institutions with corporate information for socially responsible investing (SRI). A member of the Market Evolution and Corporations in the 21st Century working group organized by the Keizai Doyukai (Japan Association of Corporate Executives), Mr. Adachi was involved in the preparation of The 15th Corporate White Paper on "Market Evolution" and CSR Management: Toward Building Integrity and Creating Shareholder Value, From March 2005 to May 2009, he also served as a national expert for Japan to the ISO 26000 working group.

This third-party opinion reflects my view of the sustainability initiatives and information disclosure of the DIC Group, as understood from reading this report, from my perspective as an individual who provides corporate information to financial institutions to assist SRI. It is not intended as a comment on whether or not the information herein has been measured and calculated accurately to conform to commonly accepted standards for the preparation of environmental or other reports or a judgment on whether the report covers relevant important matters in full. Once again this year, I had the honor of reviewing the DIC Report. I was particularly impressed with the Company's account of its success in surpassing the targets it had set, other than that for net sales, for fiscal year 2016, the first year of its medium-term management plan, DIC108, which resulted from the implementation of measures in line with the growth scenario outlined in the plan. The explanation of how DIC is managing its business portfolio by dividing its businesses into three categories—businesses with stable earnings bases, businesses that will drive growth and next-generation businesses—with the aim of long-term targets, namely, consolidated net sales of ¥1,000 billion and operating income of ¥100 billion in fiscal year 2025, was clear and convincing.

I would like to offer a few suggestions for enhancing the DIC Group's reporting of its sustainability initiatives, as well as its disclosure thereof. First, I would like to see the promotion of sustainability accorded further importance in Group management. The segments titled "Initiatives to Strengthen Governance at Subsidiaries" and "Responding to New Laws and Regulation" on page 52 were particularly timely. In DIC108, the Group pledges to work as one, guided by its new slogan, to drive DIC forward. The Group has budgeted ¥150.0 billion for strategic investments over three years. It is important to acknowledge the increasing importance of environmental and social due diligence in assessing potential M&A targets. Accordingly, I look forward to the Group enhancing its disclosure regarding the compliance, risk management, information security and other basic practices of its subsidiaries.

Second, looking at the report as a whole, my impression was that there is room for a more comprehensive explanation of the relationship between individual businesses and sustainability initiatives. For example, I recognize that the newly developed environment-friendly polyurethane resin , which has the same performance of conventional polyurethane resins but does not contain environment-damaging DMF, which is introduced on page 28, is an appropriate example of product development designed to contribute to a sustainable society. However, in recent years the pollution of oceans caused by the increased consumption and disposal of plastic waste has become a major environmental issue. I would like to see the DIC Group's awareness of such newly emerging social imperatives reported on somewhere in the DIC Report.

Third, I would like to see the Group strengthen its efforts to reduce emissions of greenhouse gases. In October 2016, the Group set a target for reducing absolute greenhouse gas emissions by 7.0% from the fiscal year 2013 level by fiscal year 2020, or an average of 1.0% annually. However, compared with recent moves toward the realization of a carbon constrained, or low-carbon, society, this is actually a rather modest goal. With the weighting of fine chemicals in the Group's product portfolio likely to continue increasing, I recognize that this is a difficult challenge, but I look forward to seeing the Group promote even more ambitious initiatives.

Last year, I stated that I would like to see an increase in reporting on initiatives in overseas markets. This year, more overseas examples were featured in the "Voice from the DIC Group" and Topics sections, so I would like to acknowledge an improvement on this score. The Group reported on its efforts to create positive work environments. I was both surprised and pleased to see on page 103 that the voluntary separation rate for female employees of the parent company has declined to less than 1% and that the average years of service for female employees currently exceeds that for male employees. In next year's DIC Report, I hope to see more farreaching information on how the Group is leveraging its strengths while at the same time integrating the concept of sustainability into each of its businesses.

## **Corporate Data**

#### Headquarters/Branches in Japan

#### **Corporate Headquarters**

#### Headquarters

DIC Building, 7-20, Nihonbashi 3-chome, Chuo-ku, Tokyo 103-8233, Japan Tel: +81-3-6733-3000

#### **Branch Offices**

#### Osaka

5-19, Kyutaro-machi 3-chome, Chuo-ku, Osaka 541-8525, Japan Tel: +81-6-6252-6161 Fax: +81-6-6245-5239

#### Nagoya

7-15, Nishiki 3-chome, Naka-ku, Nagoya 460-0003, Japan Tel: +81-52-951-9381 Fax: +81-52-962-3591

#### Plants

Tokvo

35-58, Sakashita 3-chome, Itabashi-ku, Tokyo 174-8520, Japan Tel: +81-3-3966-2111 Fax: +81-3-3965-4320

#### Chiba

12, Yawatakaigandori, Ichihara, Chiba 290-8585, Japan Tel: +81-436-41-4141 Fax: +81-436-43-1059 Hokuriku

64-2, Minatomachi-So, Hakusan, Ishikawa 929-0296, Japan Tel: +81-76-278-2332 Fax: +81-76-278-5354 Sakai

3, Takasago 1-chome, Takaishi, Osaka 592-0001, Japan Tel: +81-72-268-3111 Fax: +81-72-268-1705 Kashima

18, Higashifukashiba, Kamisu, Ibaraki 314-0193, Japan Tel: +81-299-93-8111 Fax: +81-299-92-6384 Yokkaichi

5, Kasumi 1-chome, Yokkaichi, Mie 510-0011, Japan Tel: +81-59-364-1151 Fax: +81-59-364-1620 Komaki

151-1, Nagare, Shimosue, Komaki, Aichi 485-0825, Japan Tel: +81-568-75-2751 Fax: +81-568-73-4120

#### Saitama

4472-1, Komuro, Ina-machi, Kita-Adachi-gun, Saitama 362-8577, Japan

### Tel: +81-48-722-8211 Fax: +81-48-722-6087

Tatebayashi 6023, Tobukogyodanchi, Ohshima-cho, Tatebayashi, Gunma 374-0001, Japan Tel: +81-276-77-2461 Fax: +81-276-77-2468

#### Laboratories

Central Research Laboratories

631, Sakado, Sakura, Chiba 285-8668, Japan Tel: +81-43-498-2121 Fax: +81-43-498-2229

#### Art Museum

Kawamura Memorial DIC Museum of Art 631, Sakado, Sakura, Chiba 285-8505, Japan Tel: +81-43-498-2672 Fax: +81-43-498-2139

(Information is as of March 31, 2017.)

#### Principal Subsidiaries and Affiliates

#### 📕 Japan

Cast Film Japan Co., Ltd. DC Katsuya Co., Ltd. DIC Color Coatings, Inc. DIC Color Design, Inc. DIC Color Design, Inc. DIC Covestro Polymer Ltd. DIC Decor, Inc. DIC EP Corp. DIC Estate Co., Ltd. DIC Graphics Corporation DIC Interior Co., Ltd. DIC Investments Japan, LLC. DIC Kako, Inc. DIC Kitanihon Polymer Co., Ltd. DIC Kyushu Polymer Co., Ltd. DIC Lifetec Co., Ltd. DIC Lifetec Co., Ltd. DIC Matchinery & Printer's Supplies, Inc. DIC Material Inc. DIC Plastics, Inc. Hamamatsu DIC Co., Ltd. Japan Formalin Company, Inc. KJ Chemicals Corporation Mizushima Kasozai Co., Ltd. Nippon Epoxy Resin Manufacturing Co., Ltd. Oxirane Chemical Corp. Renaissance, Inc. Seiko PMC Corporation SUNDIC Inc. Techno Science, Inc. Topic Co., Ltd. YD Plastics Co., Ltd.

#### Asia and Oceania (Excluding Japan)

Aekyung Chemical Co., Ltd. Changzhou Huari New Material Co., Ltd. DIC Alkylphenol Singapore Pte., Ltd. DIC Aikyiphenol Singapore Pte., Ltd. DIC Asia Pacific Pte Ltd DIC Australia Pty Ltd. DIC (China) Co., Ltd. DIC Colorants Taiwan Co., Ltd. DIC Compounds (Malaysia) Sdn. Bhd. DIC Epoxy (Malaysia) Sdn. Bhd. DIC Epox Chamicrob Evictor Limited DIC Fine Chemicals Private Limited DIC Graphics (Guangzhou) Ltd. DIC Graphics (Hong Kong) Ltd. DIC Graphics (Thailand) Co., Ltd. DIC Graphics Chia Lung Corp. DIC (Guangzhou) Co., Ltd. DIC India Ltd. DIC Korea Corp. DIC Lanka (Private) Ltd. DIC (Malaysia) Sdn. Bhd. DIC New Zealand Ltd. DIC Pakistan Ltd. DIC Philippines, Inc. DIC (Shanghai) Co., Ltd. DIC Synthetic Resins (Zhongshan) Co., Ltd. DIC (Taiwan) Ltd. DIC (Trading (HK) Ltd. DIC (Vietnam) Co., Ltd. DIC Zhangjiagang Chemicals Co., Ltd. Guangzhou Lidye Resin Co., Ltd.

Hainan DIC Microalgae Co., Ltd. Kangnam Chemical Co., Ltd. Lianyungang DIC Color Co., Ltd. Lianyungang DIC Color Co., Ltd. Lidye Chemical Co., Ltd. Nantong DIC Color Co., Ltd. PT DIC ASTRA Chemicals PT. DIC Graphics P.T. Pardic Jaya Chemicals Qingdao DIC Finechemicals Co., Ltd. Qingdao DIC Liquid Crystal Co., Ltd. Samling Housing Products Sdn. Bhd. Seiko PMC (Shanghai) Commerce & Trading Corp. Trading Corp. Seiko PMC (Zhangjiagang) Corporation Shanghai DIC Ink Co., Ltd. Shanghai DIC Pressure-Sensitive Adhesive Materials Co., Ltd. Adhesive Materials Co., Ltd. Shenzhen-DIC Co., Ltd. Siam Chemical Industry Co., Ltd. Sun Branding Solutions (India) Pvt. Ltd. Sun Chemical Holding (Hong Kong) Ltd. Sun Chemical Trading (Shanghai) Co., Ltd. Sugian Lintong New Materials Co., Ltd. Suzhou Lintong Chemical Science Corn Suzhou Lintong Chemical Science Corp. TOA-DIC Zhangjiagang Chemical Co., Ltd. Zhongshan DIC Colour Co., Ltd.

#### Europe and Africa

Benda-Lutz Skawina Sp. z.o.o. Benda-Lutz Volzhsky ooo Benda-Lutz Werke GmbH Coates Brothers (East Africa) Ltd. Coates Brothers (West Africa) Ltd. Coates Screen Inks GmbH DIC Europe GmbH DIC Holdings Austria GmbH DIC Holdings B.V. DIC Performance Resins GmbH ECG Holdings Ltd. Gibbon FineCal Ltd. Glenside Properties Limited Hartman D.O.O. Hartmann Druckfarben GmbH Hartmann-Sun Chemical EOOD Kingfisher Colours Ltd. Lorilleux Maroc S.A. Parker Williams Design Ltd. Sun Branding Solutions Ltd. Sun Chemical AB Sun Chemical AG Sun Chemical AG (S.A., Ltd.) Sun Chemical A.O Sun Chemical A/S Sun Chemical A/S Sun Chemical B.V. Sun Chemical d.o.o. Sun Chemical for Graphic Arts S.A.E. Sun Chemical GmbH Sun Chemical Group Coöperatief U.A. Sun Chemical Group S.p.A. Sun Chemical Holding B.V.

Sun Chemical Inks A/S Sun Chemical Inks Ltd. Sun Chemical Lasfelde GmbH Sun Chemical Ltd. Sun Chemical N.V./S.A Sun Chemical Nyomdafestek Kereskedelmi es Gyarto KFT Sun Chemical Osterode Druckfarben GmbH Sun Chemical Ogenoue Didektarben a. Sun Chemical Pigments S.L. Sun Chemical Portugal-Tintas Graficas Unipessoal Ltda. Sun Chemical Printing Ink d.o.o. Sun Chemical Publication A.E. Sun Chemical Publication Romania S.R.L. Sun Chemical Publications Bulgaria EAD Sun Chemical S.A.U. Sun Chemical S.A.S. Sun Chemical (South Africa) (Pty) Ltd. Sun Chemical s.r.l. Sun Chemical, s.r.o. Sun Chemical, s.r.o. Sun Chemical Sp. z.o.o. Sun Chemical Turkey Sun Chemical Ukraine Ltd. Sun Chemical ZAO Sun Inkjet Ceramics, S.L.

#### North, Central and South America

Benda-Lutz Corporation Camus Water Technologies LLC Coates Brothers (Caribbean) Ltd. DIC Imaging Products USA, LLC DIC International (USA), LLC Earthrise Holdings Inc. Earthrise Nutritionals, LLC. Inmobiliaria Sunchem, S.A. de C.V. Mondis Manufacturers Insurance Company N.V. New England Manufacturers Insurance Corp. Rycoline Products, LLC SC Funding LLC SC (Puerto Rico) Ink Sinclair International Inc. Sinclair S.A.S. Sinclair Sun Chemical Ecuador S.A. Sun Chemical (Chile) S.A. Sun Chemical Corporation Sun Chemical de Centro America, S.A. de C.V. Sun Chemical de Panama, S.A Sun Chemical do Brasil Ltda. Sun Chemical Inks S.A. Sun Chemical Ltd. Sun Chemical Management, L.L.C. Sun Chemical of Michigan LLC Sun Chemical Peru S.A. Sun Chemical S.A. de C.V Tintas S.A.S. Wiseman International Co., Ltd.



# DIC Report 2017

Financial Section Year ended December 31, 2016

**DIC** Corporation

• ne of the world's leading diversified chemicals companies, DIC Corporation is also the core of the DIC Group, a multinational organization with operations in more than 60 countries and territories worldwide. Established in 1908 as a manufacturer of printing inks, DIC has capitalized on its extensive technologies, know-how and experience in the years since to build a broad business portfolio of materials and finished products, enabling it to provide innovative solutions to customers in diverse industries and transforming it into a global powerhouse in its key fields of endeavor.

Now in its second century in business, DIC is redoubling its efforts to develop and market innovative, high-performance products that respond to the needs of customers in markets around the world, in line with its "Color & Comfort by Chemistry" vision. A responsible corporate citizen, DIC is also committed to helping realize environmental and social sustainability.

## The DIC WAY

#### Mission

Through constant innovation, the DIC Group strives to create enhanced value and to contribute to sustainable development for its customers and society.

#### Vision

Color & Comfort by Chemistry

#### Spirit

#### Drive

The force that propels our employees to think and take action

#### Integrity

Maintaining a moral attitude, and facing matters head-on with reason and a sense of responsibility

#### Dedication

Having a sense of ownership and ambition, and taking a passionate approach to the tasks at hand

#### Collaboration

Working to resolve matters by rallying the collective power

of the global DIC Group, while respecting the individuality and diversity of each and every one of our employees

#### Harmony

Fulfilling our social responsibility as good corporate citizens, and always remaining conscious of compliance issues

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DIC Corporation and Consolidated Subsidiaries Years ended December 31, 2016 to 2013, and years ended March 31, 2013 to 2012

	Millions of yen, except for per share information						Thousands of U.S. dollars, except for per share information (Note 7)
	Dec. 2016	Dec. 2016 Dec. 2015 Dec. 2014 Dec. 2013 Mar. 2013 Mar. 2012					
Net sales	¥751,438	¥819,999	¥830,078	¥705,647	¥703,781	¥734,276	\$6,422,547
Percent increase (decrease) (Note 4)	(8.4)%	(1.2)%	—%	—%	(4.2)%	(5.7)%	(8.4)%
Operating income	54,182	51,068	41,076	40,181	38,484	34,960	463,094
Net income attributable to owners of the parent	34,767	37,394	25,194	26,771	19,064	18,158	297,154
Equity (Note 3)	278,535	262,467	249,749	195,218	136,921	101,911	2,380,641
Total assets	764,828	778,857	803,703	761,690	692,991	675,067	6,536,991
Equity per share (Notes 1 and 5)	¥2,938.12	¥2,768.41	¥259.63	¥213.13	¥149.48	¥111.08	\$25.11
Earnings per share (basic) (Notes 2 and 5)	366.72	389.40	26.78	29.23	20.80	19.79	3.13
Cash dividends per share applicable to the period (Note 6)	64.00	8.00	6.00	6.00	6.00	4.00	0.55
Equity ratio to total assets	36.4%	33.7%	31.1%	25.6%	19.8%	15.1%	36.4%
ROE (return on equity)	12.9%	14.6%	11.3%	16.1%	16.0%	17.3%	12.9%
Number of employees	20,481	20,264	20,411	20,034	20,273	20,455	20,481

Notes: 1. The computation of equity per share has been based on the number of shares issued as of the balance sheet date.

2. The computation of earnings per share has been based on the weighted-average number of shares issued during each fiscal year.

3. Equity comprises "Total shareholders' equity" and "Total accumulated other comprehensive income.

4. In order to align the fiscal year-end with that of its consolidated subsidiaries overseas, effective from fiscal year 2013, DIC Corporation changed its fiscal year-end from March 31 to December 31. As a result, the fiscal year ended December 31, 2013, was a transitional irregular nine-month period, comprising the nine months from April to December for DIC Corporation and its subsidiaries whose fiscal year-end was previously March 31 and the 12 months from January to December for its subsidiaries whose fiscal year-end is December 31. Therefore, the percent increases (decreases) for the fiscal years ended December 31, 2013 and 2014, are not given.

- 5. The Company implemented a consolidation of shares of common stock by a factor of 10 to 1 with July 1, 2016, as the effective date. Earnings per share (basic) and equity per share are calculated respectively based on the assumption that the consolidation had been implemented at the beginning of the fiscal year ended December 31, 2015.
- 6. The Company implemented the consolidation of shares of common stock by a factor of 10 to 1 with July 1, 2016, as the effective date. Cash dividends per share applicable to the period for the fiscal year ended December 31, 2016, comprises interim dividends of ¥4.00 (before the consolidation) and year-end dividends of ¥60.00 (after the consolidation). If the consolidation had been taken into consideration, cash dividends per share applicable to the period for the fiscal year ended December 31, 2016, would be ¥100.00.
- 7. Yen amounts have been translated, for readers' convenience only, at the rate of ¥117 to US\$1, the approximate rate of exchange at December 31, 2016.



#### Net Income Attributable to Owners of the Parent



#### Operating Income (Billions of yen)











#### **Dividend Payout Ratio**



### This document presents consolidated results for fiscal year 2016, comprising the accounts for the year ended December 31, 2016, of DIC and its domestic and overseas subsidiaries.

#### Operating Results

In fiscal year 2016, ended December 31, 2016, the economies of North America and Europe continued to see moderate recovery. In Asia, a revival was seen in the People's Republic of China (PRC) and Southeast Asia. Conditions in India remained on a gentle upswing. Japan's economy, while still fragile, showed signs of a gradual rally. In this environment, consolidated net sales declined 8.4%, to ¥751.4 billion, notwithstanding firm shipments, owing to the appreciation of the yen against other major currencies, among others. Operating income advanced 6.1%, to ¥54.2 billion. Factors behind this result included increased sales of high-value-added products and cost reductions. Ordinary income rose 13.9%, to ¥55.8 billion, bolstered by an improved financial position and other factors. Both operating income and ordinary income results represented record highs. Net income attributable to owners of the parent decreased 7.0%, to ¥34.8 billion, with contributing factors including a decline in gain on sales of non-current assets.

	Billions of yen			Change calculated in	
	FY2016	FY2015	Change (%)	local c	urrency (%)
Net sales	¥751.4	¥820.0	(8.4)%		(0.3)%
Operating income	54.2	51.1	6.1		14.7
Ordinary income	55.8	49.0	13.9		
Net income attributable to owners of the parent	34.8	37.4	(7.0)		
					Yen
				FY2016	FY2015
Average exchange rate (¥/US\$)				¥109.96	¥120.85

#### Segment Results

Segment results in key markets are as follows. Year-on-year percentage changes in squared parentheses represent increases or decreases excluding the impact of foreign currency fluctuations. Interregional transactions within the Printing Inks segment are included. Accordingly, the aggregates of regional net sales and operating income figures for the Printing Inks segment differ from the figures presented in the Notes to the Consolidated Financial Statements.

### **Printing Inks**

#### Japan

Sales of packaging inks benefited from healthy shipments. However, overall sales in Japan slipped, reflecting decreased demand for publishing inks and news inks and the erosion of sales prices across the board. Operating income soared, underpinned by the aforementioned shipments, as well as by the positive impact of cost reductions and an improved product mix, among others.

#### The Americas and Europe

Although sales of packaging inks rose, sales in Europe and North America were down, owing to waning demand for publishing inks and news inks. Sales in Central and South America advanced, buoyed by brisk shipments of packaging inks and publishing inks. As a consequence of various factors, including these results, and of the impact of foreign currency fluctuations, overall sales in the Americas and Europe declined. Foreign currency fluctuations also hindered operating income, which decreased despite being level in local currency terms. 3

#### Asia and Oceania

While shipments of packaging inks were solid, flagging sales prices in all product categories pushed down sales in the PRC. A sharp increase in sales of publishing inks and packaging inks underpinned higher sales in Southeast Asia. In Oceania, sales rose, bolstered by robust shipments of publishing inks and packaging inks. Sales in India slipped, with contributing factors including falling sales of news inks. For these and other reasons, overall sales in Asia and Oceania decreased, hampered by foreign currency fluctuations. Operating income was up in local currency terms, bolstered by higher sales of high-value-added products, cost reductions and other factors, but down after translation, reflecting foreign currency fluctuations.

		Billions of yen	Change (%)	Change calculated in
Japan	Net sales	¥ 79.8	(1.2)%	
	Operating income	5.1	62.5	
The Americas and Europe	Net sales	232.7	(14.8)	(1.1)%
	Operating income	8.4	(19.7)	(0.0)
Asia and Oceania	Net sales	61.6	(12.6)	(0.3)
	Operating income	4.8	(8.9)	3.5

### **Fine Chemicals**

In pigments, sales in Japan were lifted by brisk shipments of functional pigments, including those for color filters, while sales in the Americas and Europe decreased, notwithstanding a substantial increase in sales of pigments for cosmetics, as a consequence of foreign currency fluctuations. Sales of thin-film transistor (TFT) liquid crystals (LCs) rose substantially, reflecting higher shipments from a new production facility in the PRC and the start of full-scale shipments from Japan, which had been delayed. While these factors boosted results in local currency terms, segment sales were down after translation, owing to foreign currency fluctuations. Segment operating income advanced substantially, underpinned by an improved product mix, among others.

	Billions of yen FY2016	Change (%)	Change calculated in local currency (%)
Net sales	¥128.2	(5.4)%	2.2%
Operating income	14.4	10.0	16.8

### **Polymers**

Despite generally firm shipments, sales in Japan declined as a result of falling sales prices. Sales overseas were also down, hindered by the deterioration of sales prices and by foreign currency fluctuations, although sales to customers in the electrical and electronics industries were solid. For these and other reasons, segment sales decreased. Cost reductions and other factors sparked a sharp increase in segment operating income.

	Billions of yen		Change calculated in	
	FY2016	Change (%)	local currency (%)	
Net sales	¥180.9	(7.0)%	(3.0)%	
Operating income	19.6	23.0	29.6	

### Compounds

Sales of polyphenylene sulfide (PPS) compounds advanced, as shipments were healthy both in Japan and overseas. Thanks to robust shipments overseas, sales of jet inks were up overall, despite the negative impact of foreign currency fluctuations on exports, which hurt domestic sales. Although these factors led to an increase in local currency terms, segment sales decreased after translation, owing to foreign currency fluctuations. Segment operating income declined, reflecting segment sales results, among others.

	Billions of yen		Change calculated in	
	FY2016	Change (%)	local currency (%)	
Net sales	¥61.1	(3.9)%	3.5%	
Operating income	5.0	(13.3)	(6.1)	

### **Application Materials**

Persistently robust shipments sustained an increase in sales of hollow-fiber membrane modules. Nonetheless, segment sales declined, despite being level in local currency terms. Reasons for this result included dwindling sales of industrial adhesive tapes, which were hindered by sluggish demand for products used in smartphones. Segment operating income fell, with contributing factors including the aforementioned sales results.

	Billions of yen		Change calculated in
	FY2016	Change (%)	local currency (%)
Net sales	¥55.7	(3.2)%	(0.5)%
Operating income	1.9	(11.1)	(9.4)

#### Analysis of Cash Flows

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Cash and cash equivalents as of December 31, 2016, totaled ¥16.7 billion, an increase of ¥1.6 billion from the previous fiscal year-end.

#### **Operating Activities**

Net cash provided by operating activities amounted to ¥62.5 billion, up from ¥29.1 billion provided by such activities in fiscal year 2015. Income before income taxes and non-controlling interests was ¥49.9 billion, while the adjustment for depreciation and amortization amounted to ¥32.4 billion. Income taxes paid totaled ¥15.8 billion, while working capital increased ¥4.8 billion.

#### **Investing Activities**

Net cash used in investing activities came to ¥32.2 billion, up from ¥10.0 billion used in such activities in the previous fiscal year. A total of ¥31.3 billion was applied to capital expenditure, comprising the purchase of property, plant and equipment and the purchase of intangible assets, while ¥971 million was used for the purchase of investment securities. Proceeds from subsidy income totaled ¥842 million.

#### **Financing Activities**

Net cash used in financing activities amounted to ¥26.9 billion, compared with ¥24.8 billion used in such activities in fiscal year 2015. The net total of funds applied to the repayment of interest-bearing debt was ¥17.1 billion, while cash dividends paid totaled ¥7.6 billion.

### Consolidated Balance Sheet

DIC Corporation and Consolidated Subsidiaries December 31, 2016

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		2016	Aillions of yen
Current assets:		2018	2015
Cash and dep	osits (Notes 6 and 19)	¥ 17,241	¥ 15,363
Notes and acc	counts receivable—trade (Notes 11, 19 and 20)	215,369	221,006
Merchandise	and finished goods (Note 11)	82,611	87,947
Work in proce	ess (Note 11)	9,461	9,369
Raw materials	and supplies (Note 11)	53,605	52,245
Deferred tax a	assets (Note 16)	9,915	11,435
Other (Note 1	9)	21,374	21,947
Allowance for	doubtful accounts	(10,839)	(10,654)
Total curre	ent assets	398,737	408,658
Non-current assets	5:		
Property, plant an	d equipment (Notes 9, 10 and 11):		
Buildings and	structures	92,092	95,879
Machinery, ec	quipment and vehicles	66,342	70,226
Tools, furnitu	re and fixtures	10,142	9,605
Land		50,169	50,775
Construction	in progress	7,915	6,660
Total prop	erty, plant and equipment	226,660	233,145
Intangible assets (	Note 10):		
Goodwill		501	906
Software		4,878	6,470
Other		3,563	3,880
Total intar	ngible assets	8,942	11,256
Investments and c	other assets:		
Investment se	curities (Notes 7, 8 and 19)	41,007	37,075
Deferred tax a	assets (Note 16)	36,996	38,939
Net defined b	enefit asset (Note 12)	28,074	24,885
Other (Notes	7 and 19)	25,899	25,296
Allowance for	doubtful accounts	(1,487)	(397)
Total inves	stments and other assets	130,489	125,798
Total non-	-current assets	366,091	370,199
Total asse	ts	¥764,828	¥778,857

See notes to the consolidated financial statements.
<b>Liabilities and</b>
Net Assets

	2016	2015
Current liabilities:		
Notes and accounts payable—trade (Notes 19 and 20)	¥ 94,392	¥ 95,569
Short-term loans payable (Notes 11 and 19)	52,744	20,632
Current portion of long-term loans payable (Notes 11, 19 and 20)	43,647	61,630
Commercial papers (Notes 11 and 19)	—	4,000
Current portion of bonds (Notes 11, 19 and 20)	—	8,000
Lease obligations (Notes 11 and 19)	584	572
Income taxes payable (Notes 16 and 19)	4,153	8,347
Deferred tax liabilities (Note 16)	322	295
Provision for bonuses	7,050	6,914
Other (Note 19)	62,447	65,321
Total current liabilities	265,339	271,280
Non-current liabilities:		
Bonds payable (Notes 11, 19 and 20)	30,000	20,000
Long-term loans payable (Notes 11, 19 and 20)	109,918	139,900
Lease obligations (Notes 11 and 19)	4,394	4,718
Deferred tax liabilities (Note 16)	9,598	8,555
Net defined benefit liability (Note 12)	28,072	32,833
Asset retirement obligations	1,334	1,213
Other	9,156	10,501
Total non-current liabilities	192,472	217,720
Total liabilities	457,811	489,000
Net assets:		
Shareholders' equity (Notes 13 and 23):		
Capital stock (Note 14)	96,557	96,557
Capital surplus	94,094	94,161
Retained earnings	159,541	137,071
Treasury shares (Note 15)	(1,213)	(5,911)
Total shareholders' equity	348,979	321,878
Accumulated other comprehensive income:		
Valuation difference on available-for-sale securities	5,248	3,688
Deferred gains or losses on hedges	(187)	(73)
Foreign currency translation adjustment	(48,626)	(29,925)
Remeasurements of defined benefit plans (Note 12)	(26,879)	(33,101)
Total accumulated other comprehensive income	(70,444)	(59,411)
Non-controlling interests	28,482	27,390
Total net assets	307,017	289,857
Total liabilities and net assets	¥764,828	¥778,857

Millions of yen

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# Consolidated Statement of Income

DIC Corporation and Consolidated Subsidiaries Year ended December 31, 2016

	Millions of y	
	2016	2015
Net sales	¥751,438	¥819,999
Cost of sales	571.895	635,106
Gross profit	179,543	184,893
Selling, general and administrative expenses (Note 17)	125,361	133,825
Operating income	54,182	51,068
Non-operating income:		
Interest income	575	1,198
Dividends income	401	365
Equity in earnings of affiliates	3,266	2 735
Foreign exchange gains	607	
Other	2 182	2 282
Total non operating income	7 021	6 6 9 1
	7,051	0,001
Non-operating expenses:		
Interest expenses	3,227	5,485
Foreign exchange losses		567
Other	2,189	2,702
Total non-operating expenses	5,416	8,754
Ordinary income	55,797	48,995
Extraordinary income:		
State subsidy	842	255
Gain on bargain purchase	78	
Gain on sales of non-current assets	_	14 229
Gain on sales of subsidiaries and affiliates securities		2 723
Companyation income		704
Compensation income		555
Total extraordinary income	920	18,466
Extraordinary loss:		
Loss on disposal of non-current assets	4,412	3,550
Severance costs	1,416	3,787
Provision of allowance for doubtful accounts	553	
Loss on disaster	440	
Loss on valuation of investments in capital		716
Impairment loss (Note 10)		674
Loss on reduction of non-current assets		168
Total extraordinary loss	6,821	8,895
Income before income taxes and pen controlling interacts	40.906	
Income before income taxes and non-controlling interests	49,896	20,200
Income taxes—current	11 565	1/1 २८१
Income taxes deforred	767	4,551
	107	10.005
Total income taxes	12,332	18,985
Net income	37,564	39,581
Net income attributable to non-controlling interests	2.797	2.187
Net income attributable to owners of the parent	¥ 34,767	¥ 37,394
		Yen
Earnings per share (Note 2):		
Basic	¥ 366.72	¥ 389.40
Diluted		
Weighted-average number of shares issued during the period,	94,805	96,030
excluding treasury snares (in thousands)	¥ 64.00	¥ 000
Cash dividends per share applicable to the period (Note 2)	¥ 04.00	∓ ŏ.UU



DIC Corporation and Consolidated Subsidiaries Year ended December 31, 2016

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	Ν	/illions of yen
	2016	2015
Net income	¥ 37,564	¥ 39,581
Other comprehensive income:		
Valuation difference on available-for-sale securities	1,609	845
Deferred gains or losses on hedges	(112)	102
Foreign currency translation adjustment	(18,179)	(14,523)
Remeasurements of defined benefit plans, net of tax (Note 12)	6,266	3,560
Share of other comprehensive income of associates accounted for using equity method	(965)	(1,309)
Total other comprehensive income (Note 22)	¥(11,381)	¥(11,325)
Comprehensive income	¥ 26,183	¥ 28,256
Comprehensive income attributable to:		
Comprehensive income attributable to owners of the parent	¥ 23,734	¥ 26,782
Comprehensive income attributable to non-controlling interests	2,449	1,474

# Consolidated Statement of Changes in Net Assets

DIC Corporation and Consolidated Subsidiaries Year ended December 31, 2016

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						Millions of yen
					Sha	areholders' equity
	Issued number of common stock (thousands)	Capital stock	Capital surplus	Retained earnings	Treasury shares	Total shareholders' equity
Balance at January 1, 2015	965,372	¥96,557	¥94,161	¥108,726	¥ (896)	¥298,548
Cumulative effects of changes in accounting policies				(2,316)		(2,316)
Restated balance	965,372	96,557	94,161	106,410	(896)	296,232
Dividends from surplus, ¥7.00 per share (Note 13)				(6,733)		(6,733)
Net income attributable to owners of the parent				37,394		37,394
Purchase of treasury shares— 13,849,737 shares					(5,015)	(5,015)
Net changes of items other than shareholders' equity (Notes 8 and 13)						
Balance at December 31, 2015	965,372	96,557	94,161	137,071	(5,911)	321,878
Dividends from surplus, ¥8.00 per share (Note 13)				(7,585)		(7,585)
Net income attributable to owners of the parent				34,767		34,767
Purchase of treasury shares— 19,473 shares					(19)	(19)
Retirement of treasury shares (Notes 14 and 15)	(13,803)		(5)	(4,712)	4,717	_
Consolidation of shares (Notes 14 and 15)	(856,412)					
Change in treasury shares of parent arising from transactions with non-controlling shareholders			(62)			(62)
Net changes of items other than shareholders' equity (Notes 8 and 13)						
Balance at December 31, 2016	95,157	¥96,557	¥94,094	¥159,541	¥(1,213)	¥348,979

							Millions of yen
	Accumulated other comprehensive income						
	Valuation difference on available-for-sale securities	Deferred gains or losses on hedges	Foreign currency translation adjustment	Remeasurements of defined benefit plans	Total accumulated other comprehensive income	Non-controlling interests	Total net assets
Balance at January 1, 2015	¥2,914	¥(178)	¥(14,817)	¥(36,718)	¥(48,799)	¥26,974	¥276,723
Cumulative effects of changes in accounting policies						(99)	(2,415)
Restated balance	2,914	(178)	(14,817)	(36,718)	(48,799)	26,875	274,308
Dividends from surplus, ¥7.00 per share (Note 13)							(6,733)
Net income attributable to owners of the parent							37,394
Purchase of treasury shares— 13,849,737 shares							(5,015)
Net changes of items other than shareholders' equity (Notes 8 and 13)	774	105	(15,108)	3,617	(10,612)	515	(10,097)
Balance at December 31, 2015	3,688	(73)	(29,925)	(33,101)	(59,411)	27,390	289,857
Dividends from surplus, ¥8.00 per share (Note 13)							(7,585)
Net income attributable to owners of the parent							34,767
Purchase of treasury shares— 19,473 shares							(19)
Retirement of treasury shares (Notes 14 and 15)							
Consolidation of shares (Notes 14 and 15)							
Change in treasury shares of parent arising from transactions with non-controlling shareholders							(62)
Net changes of items other than shareholders' equity (Notes 8 and 13)	1,560	(114)	(18,701)	6,222	(11,033)	1,092	(9,941)
Balance at December 31, 2016	¥5,248	¥(187)	¥(48,626)	¥(26,879)	¥(70,444)	¥28,482	¥307,017



# Consolidated Statement of Cash Flows

DIC Corporation and Consolidated Subsidiaries Year ended December 31, 2016

Millions		
-	2016	2015
Net cash provided by (used in) operating activities:		
Income before income taxes and non-controlling interests	¥ 49,896	¥ 58,566
Adjustments for:		
Depreciation and amortization	32,444	32,886
Amortization of goodwill	373	477
Increase (decrease) in allowance for doubtful accounts	1,540	583
Increase (decrease) in provision for bonuses	149	383
Interest and dividends income	(976)	(1,563
Equity in (earnings) losses of affiliates	(3,266)	(2,735
Interest expenses	3,227	5,48
Loss (gain) on sales and retirement of non-current assets	4,412	(10,679
Impairment loss	—	67
Loss (gain) on sales of subsidiaries and affiliates securities	—	(2,723
Loss (gain) on sales of investment securities	—	(555
Loss on valuation of investments in capital		71
State subsidy	(842)	(255
Decrease (increase) in notes and accounts receivable—trade	(2,150)	(15,878
Decrease (increase) in inventories	(828)	1,94
Increase (decrease) in notes and accounts payable—trade	(1,810)	(12,383
Other, net	(2,775)	(12,844
Subtotal	79,394	42,09
Interest and dividends income received	2,130	2,73
Interest expenses paid	(3,254)	(5,724
Income taxes paid	(15,766)	(9,989
Net cash provided by (used in) operating activities	62,504	29,11
Net cash provided by (used in) investing activities:		
Payments into time deposits	(6,505)	(3,297
Proceeds from withdrawal of time deposits	6,219	3,38
Purchase of property, plant and equipment	(30,310)	(31,247
Proceeds from sales of property, plant and equipment	455	14,67
Purchase of intangible assets	(969)	(84)
Purchase of investments in subsidiaries resulting in change in scope of consolidation	(114)	(1.873
Proceeds from sales of investments in subsidiaries resulting in change in scope of consolidation	_	2,10
Purchase of subsidiaries and affiliates securities		(49
Proceeds from sales of subsidiaries and affiliates securities		6,35
Purchase of investment securities	(971)	(48
Proceeds from sales and redemption of investment securities	376	64
Payments for transfer of business	(275)	
Proceeds from subsidy income	842	20
Other. net	(950)	1
Net cash provided by (used in) investing activities	(32,202)	(9.973
Net cash provided by (used in) financing activities:	(//	(- /
Net increase (decrease) in short-term loans pavable	30,364	(8 847
Increase (decrease) in commercial naners	(4 000)	4 00
Proceeds from long-term loans payable	30.069	62 44
Renavment of long-term loans payable	(75 576)	(79.13)
Proceeds from issuance of bonds	10 000	20.00
Redemotion of bonds	(8,000)	(10.000
Cash dividends paid	(7,585)	(6 73
Cash dividends paid to non-controlling interests	(1,303)	(0,75.
	(1,047)	(50)
Other net	(1.059)	(3,01)
Net cash provided by (used in) financing activities	(1,000)	(32)
Effort of exchange rate change on each and each activities	(20,852)	(24,80
Effect of exchange rate change on cash and cash equivalents	(1,892)	4,38
Net increase (decrease) in cash and cash equivalents	1,000	(1,280
Cash and cash equivalents at beginning of the period (Note 6)	15,113 V 16,671	V 1E 11
Lash and cash equivalents at end of the period (Note 6)	Ŧ 10,0/1	∓ ID,II



# Notes to the Consolidated Financial Statements

DIC Corporation and Consolidated Subsidiaries Year ended December 31, 2016

#### Note 1:

Basis of	
Presenting	
Financial	
Statements	

The accompanying consolidated financial statements have been prepared in accordance with the provisions set forth in the Japanese Financial Instruments and Exchange Act and its related accounting regulations, and in accordance with accounting principles generally accepted in Japan ("Japanese GAAP"), which are different in certain respects as to application and disclosure requirements of the International Financial Reporting Standards ("IFRS").

In preparing these consolidated financial statements, certain reclassifications and rearrangements have been made to the consolidated financial statements issued domestically in order to present them in a form which is more familiar to readers outside Japan. The consolidated financial statements are stated in Japanese yen, the currency of the country in which DIC Corporation (the "Company") is incorporated.

# Note 2:

Summary of Significant Accounting Policies

# **Consolidated financial statements**

Under the control or influence concept, those companies in which the Company, directly or indirectly, is able to exercise control over operations are fully consolidated and those companies over which the Company has the ability to exercise significant influence are accounted for by the equity method.

The consolidated financial statements include the accounts of the Company and its significant subsidiaries: Sun Chemical Group Coöperatief U.A., DIC (China) Co., Ltd., DIC Asia Pacific Pte Ltd, SEIKO PMC CORPO-RATION, DIC Investments Japan, LLC., DIC Graphics Corporation and 144 other companies in the fiscal year ended December 31, 2016 (146 other companies in the fiscal year ended December 31, 2016). All significant intercompany balances and transactions have been eliminated in consolidation. All material unrealized profit included in assets resulting from transactions within the Company and its consolidated subsidiaries (the "Group") is eliminated.

Investments in 23 affiliates in the fiscal year ended December 31, 2016 (22 in the fiscal year ended December 31, 2015) are accounted for by the equity method.

# Accounting period of consolidated subsidiaries

The closing date of the consolidated subsidiaries is the same as the consolidated closing date.

# Cash and cash equivalents

Cash and cash equivalents consist primarily of cash on hand, certificates of deposit and short-term investments with original maturities of three months or less that are readily convertible to known amounts of cash and have insignificant risk of changes in value.

#### **Investment securities**

Investment securities are classified and accounted for, depending on management's intent, into available-forsale securities. Available-for-sale securities are carried at fair value as of the balance sheet date, with unrealized gain and loss, net of applicable taxes, reported in a separate component of net assets. Available-for-sale securities whose fair values are not readily available are carried at cost. The cost of securities sold is determined based on the moving-average method.

# Allowance for doubtful accounts

Allowance for doubtful accounts of the Company and its domestic consolidated subsidiaries is provided based on historical experience for normal receivables and on an estimate of collectibility of receivables from companies in financial difficulty.

Allowance for doubtful accounts of foreign consolidated subsidiaries is provided based on an estimate of collectibility of receivables.

#### Inventories

Inventories are principally stated at cost, cost being determined by the FIFO method, which evaluates the amount of the inventories shown in the balance sheet by writing them down based on their decrease in profitability.

# Property, plant and equipment (excluding leased assets)

Property, plant and equipment are carried at cost. Significant renewals and additions are capitalized; maintenance and repairs, and minor renewals and improvements, are charged to income as incurred.

Depreciation of buildings (other than facilities attached to buildings) of the Company and its domestic consolidated subsidiaries is calculated principally by the straight-line method. Besides, depreciation of facilities attached to buildings and structures acquired on or after April 1, 2016 is also calculated by the straight-line method. Other property, plant and equipment are calculated by the declining-balance method.

Depreciation of property, plant and equipment of foreign consolidated subsidiaries is calculated principally by the straight-line method. The range of useful lives is principally from 8 to 50 years for buildings and structures and from 3 to 11 years for machinery, equipment and vehicles.

#### Intangible assets (excluding leased assets)

Intangible assets are carried at cost less accumulated amortization, and are amortized by the straight-line method. Goodwill is amortized by the straight-line method over a reasonable period not exceeding 20 years.

#### Leased assets

Leased assets related to finance leases that do not transfer ownership of the leased property to the lessee are depreciated on a straight-line basis, with the lease periods used as their useful lives and no residual value.

Foreign consolidated subsidiaries account for lease transactions in accordance with either the accounting principles generally accepted in the United States ("U.S. GAAP") or IFRS.

#### **Retirement and pension plans**

The Company and its domestic consolidated subsidiaries account for net defined benefit asset/liability for employees' and executive officers' retirement benefits. Pension assets are deducted from retirement benefit obligations and the net amount is recognized based on the estimated amount of payment as of the balance sheet date. In calculating retirement benefit obligations, the Company applies a method of attributing expected retirement benefits to each period on a benefit formula basis. The Company and its domestic consolidated subsidiaries amortize actuarial gain and loss in the succeeding years primarily by the straight-line method over stated years that do not exceed the average remaining service period of the eligible employees (15 to 16 years). Past service costs are amortized in the accounting periods when they accrue.

Foreign consolidated subsidiaries are accounted for in accordance with either U.S. GAAP or IFRS. Actuarial gains and losses are amortized in the succeeding year primarily by the straight-line method over stated years that do not exceed the average remaining service period of the eligible employees (10 to 28 years). Past service costs are amortized over 4 to 26 years.

Unrecognized actuarial gains and losses and unrecognized past service costs are recorded in "Remeasurements of defined benefit plans" in net assets after adjusting income tax effect.

#### Asset retirement obligations

The asset retirement obligation is recognized as the sum of the discounted cash flows required for the future asset retirement and is recorded in the period in which the obligation is incurred if a reasonable estimate can be made. If a reasonable estimate of the asset retirement obligation cannot be made in the period in which the asset retirement obligation is incurred, the liability should be recognized when a reasonable estimate of the asset retirement obligation of a liability for an asset retirement obligation, an asset retirement cost is capitalized by increasing the carrying amount of the related fixed asset by the amount of the liability. The asset retirement cost is subsequently allocated to expense through depreciation over the remaining useful life of the asset. Over time, the liability is accreted to its present value each period. Any subsequent revisions to the timing or the amount of the original estimate of undiscounted cash flows are reflected as an increase or a decrease in the carrying amount of the liability and the capitalized amount of the related asset retirement cost.

#### **Income taxes**

The provision for income taxes is computed based on the pretax income (loss) included in the consolidated statement of income.

Deferred income taxes are recorded to reflect the impact of temporary differences between assets and liabilities recognized for financial reporting purposes and such amounts recognized for tax purposes. These deferred taxes are measured by applying currently enacted tax laws to the temporary differences.

# **Research and development costs**

Research and development costs are charged to income as incurred.

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# Basis of translation of financial statements of foreign consolidated subsidiaries

The financial statements of foreign consolidated subsidiaries included in the consolidated financial statements are translated into Japanese yen based on the following procedures:

(1) Assets and liabilities of foreign consolidated subsidiaries are translated into Japanese yen at the exchange rates as of the balance sheet date.

(2) Income and expenses are translated into Japanese yen at the average rate during the year.

The differences of translation are included in foreign currency translation adjustment and non-controlling interests, which are presented as separate components of net assets.

#### Translation of foreign currency account

Receivables and payables denominated in foreign currencies are translated into Japanese yen at the exchange rates as of the balance sheet date and any difference arising from the translation is recognized in the consolidated statement of income if hedge accounting is not applied.

#### **Derivatives and hedging activities**

To hedge risks associated with the fluctuations of exchange rates, interest rates and commodity prices, the Group uses foreign currency forward contracts, currency options and swaps, interest rate swaps, and commodity swaps. To hedge a part of the risks associated with the fluctuations of exchange rates for investments in foreign entities, the Company uses loans denominated in foreign currencies. The Group does not enter into derivatives for trading or speculative purposes.

Derivative financial instruments and foreign currency transactions are classified and accounted for as follows: 1) all derivatives are recognized as either assets or liabilities and measured at fair value, with gains or losses recognized in the consolidated statement of income and 2) for derivatives used for hedging purposes, if derivatives qualify for hedge accounting because of high correlation and effectiveness between the hedging instruments and the hedged items, gains or losses on derivatives are deferred until maturity of the hedged transactions.

Receivables and payables denominated in foreign currencies are translated at the contracted rates if the forward contracts qualify for hedge accounting. Gains and losses related to qualifying hedges of firm commitments or anticipated transactions are deferred and recognized in income when the hedged transaction occurs. If interest rate swaps qualify for hedge accounting and meet certain specific matching criteria, they will not be measured at market value, rather the differential paid or received under the swaps will be recognized in interest expenses or interest income.

#### Per share information

Earnings per share (basic) is computed by dividing net income attributable to owners of the parent available to common shareholders by the weighted-average number of shares issued for the period, retroactively adjusted for stock splits.

The Company implemented the consolidation of shares of common stock by a factor of 10 to 1, with July 1, 2016, as the effective date. Earnings per share (basic) is calculated based on the assumption that the consolidation had been implemented at the beginning of the fiscal year ended December 31, 2015.

Earnings per share (diluted) reflects the potential dilution that could occur if securities were exercised or converted into common stock. Earnings per share (diluted) assumes full conversion of the outstanding convertible notes and bonds at the beginning of the year (or at the time of issuance) with an applicable adjustment for related interest expense, net of tax, and full exercise of outstanding warrants.

Cash dividends per share presented in the accompanying consolidated statement of income are dividends applicable to the respective years, including dividends to be paid after the end of the year.

Cash dividends per share applicable to the period for the fiscal year ended December 31, 2016, comprises interim dividends of ¥4.00 (before the consolidation) and year-end dividends of ¥60.00 (after the consolidation). If the consolidation had been taken into consideration, cash dividends per share applicable to the period for the fiscal year ended December 31, 2016, would be ¥100.00.

# Note 3:

Accounting Changes **Application of Accounting Standard for Business Combinations and other regulations** Effective from the beginning of the fiscal year ended December 31, 2016, the Company has applied "Accounting Standard for Business Combinations" (ASBJ Statement No. 21, September 13, 2013), "Accounting Standard for Consolidated Financial Statements" (ASBJ Statement No. 22, September 13, 2013), "Accounting Standard for Business Divestitures" (ASBJ Statement No. 7, September 13, 2013), etc. As a result, the method of recording the amount of difference caused by changes in the Company's ownership interests in subsidiaries in the case of subsidiaries under ongoing control of the Company was changed to one in which it is recorded as capital surplus, and the method of recording acquisition-related costs was changed to one in which they are recognized as expenses for the fiscal year in which they are incurred. Furthermore, for business combinations carried out on or after the beginning of the fiscal year ended December 31, 2016, the accounting method was changed to one in which the reviewed acquisition cost allocation resulting from the finalization of the provisional accounting treatment is reflected in the consolidated financial statements for the fiscal year to which the date of business combination belongs. In addition, the presentation method for "Net income" and other related items was changed, and the presentation of "Minority interests" was changed to "Non-controlling interests."

Application of "Accounting Standard for Business Combinations," etc., is in line with the transitional measures provided for in paragraph 58-2 (4) of "Accounting Standard for Business Combinations," paragraph 44-5 (4) of "Accounting Standard for Consolidated Financial Statements" and paragraph 57-4 (4) of "Accounting Standard for Business Divestitures." The Company is applying the standards prospectively from the beginning of the fiscal year ended December 31, 2016.

In addition, in the consolidated statement of cash flows for the fiscal year ended December 31, 2016, the Company adopted the method of recording cash flows from the purchase or sales from changes in ownership interests in subsidiaries that do not result in change in scope of consolidation as "Net cash provided by (used in) financing activities." Moreover, the method of recording cash flows relating to costs arising from the purchase of investments in subsidiaries resulting in change in scope of consolidation and costs arising from the purchase or sales from changes in ownership interests in subsidiaries that do not result in change in scope of consolidation and costs arising from the purchase or sales from changes in ownership interests in subsidiaries that do not result in change in scope of consolidation as "Net cash provided by (used in) operating activities" was adopted.

As a result, the impact of this change on the consolidated financial statements for the fiscal year ended December 31, 2016 was immaterial.

# Application of Practical Solution on a change in depreciation method due to Tax Reform 2016

Following the revision to the Corporation Tax Act, the Company has applied "Practical Solution on a change in depreciation method due to Tax Reform 2016" (ASBJ Practical Issues Task Force No. 32, June 17, 2016) from the second quarter ended June 30, 2016, and changed the depreciation method for facilities attached to buildings and structures acquired on or after April 1, 2016 from the declining-balance method to the straight-line method.

As a result, the impact of this change on the consolidated financial statements for the fiscal year ended December 31, 2016 was immaterial.

# Note 4:

Changes in Presentation (Consolidated Balance Sheet)

# Note 5:

New Accounting Pronouncement "Long-term loans receivable" of "Investments and other assets," which had previously been separately presented, is included in "Other" from the fiscal year ended December 31, 2016, because its materiality has decreased, and prior period financial statements have been reclassified in accordance with the new presentation. The balance which is included in "Other" as of December 31, 2015 is ¥110 million.

#### Implementation Guidance on Recoverability of Deferred Tax Assets

On March 28, 2016, ASBJ issued ASBJ Guidance No. 26, "Implementation Guidance on Recoverability of Deferred Tax Assets."

# (1) Overview

When authority for providing practical guidelines on the accounting and auditing treatment of recoverability of deferred tax assets (limited to the portion related to accounting treatment) was transferred from JICPA to ASBJ, ASBJ fundamentally followed the framework of classifications mainly prescribed in JICPA Auditing Standards Board Report No. 66, "Audit Treatment of Judgments with Regard to Recoverability of Deferred Tax Assets." This system classifies companies into five categories and the amount of deferred tax assets to be recorded is estimated in accordance with these classifications. The implementation guidance makes necessary reviews a part of the classification criteria and treatment of the amount of deferred tax assets to be recorded. With

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regard to the recoverability of deferred tax assets, the implementation guidance prescribes the guidelines to be used when applying accounting standards related to tax-effect accounting (Business Accounting Council).

(Review of the criteria as to the classification and the treatment for the recognition of deferred tax assets)

- (i) accounting treatments for entities which are not included in any categories,
- (ii) criteria as to the classification of entities in Category 2 and Category 3,
- (iii) accounting treatments of unscheduled deductible temporary differences for entities in Category 2,
- (iv) accounting treatments for deductible temporary differences for entities in Category 3, which are scheduled to be deductible after five years, and
- (v) accounting treatments for entities in Category 4 in the current fiscal year, which are expected to be included in Category 2 or Category 3 in the following year.
- (2) Date of adoption

The Company and its domestic consolidated subsidiaries will adopt the revised implementation guidance from the beginning of the fiscal year ending December 31, 2017.

# (3) Impact of the adoption of the implementation guidance

The Company is in the process of measuring the effects of applying the revised implementation guidance in future applicable periods.

# Note 6:

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Equivalents	Cash and cash equivalents as of December 31, 2016 and 2015 include the following:	М	illions of yen
	-	2016	2015
	Cash and deposits	¥17,241	¥15,363
	Less: time deposits and short-term investments which mature over three months after the date of acquisition	(570)	(250)
	Cash and cash equivalents	¥16,671	¥15,113

# Note 7:

Investments in Unconsolidated Subsidiaries and	Investments in unconsolidated subsidiaries and affiliates as of December 31, 2016 and
Aminates	Investments in stock of unconsolidated subsidiaries and affiliates
	Investments in equity of unconsolidated subsidiaries and affiliates
	Total

# Note 8:

Investment Securities

The carrying amounts and aggregate fair values of available-for-sale securities at December 31, 2016 and 2015 are as follows:

2015 include the following:

2016

1,398

¥21,678

¥23,076

Millions of yen

2015

1,465

¥20,590

¥22,055

			Ν	Villions of yen
				2016
		Unrealized	Unrealized	
	Cost	gains	losses	Fair value
Available-for-sale securities:				
Stocks	¥8,190	¥7,752	¥(54)	¥15,888
Total	¥8,190	¥7,752	¥(54)	¥15,888

			١	Villions of yen
				2015
	Cost	Unrealized	Unrealized	Fair value
	COSI	gairis	105565	Fail Value
Available-for-sale securities:				
Stocks	¥8,333	¥5,588	¥(73)	¥13,848
Total	¥8,333	¥5,588	¥(73)	¥13,848



# Note 9:

Property, Plant and Equipment

Accumulated depreciation on property, plant and equipment as of December 31, 2016 and 2015 is ¥545,419 million and ¥554,121 million, respectively.

#### **Note 10:**

Impairment of Long-Lived Assets

Impairment losses on long-lived assets for the fiscal year ended December 31, 2015 for each asset group is as follows:

			Millions of yen
			2015
Used status	Category of assets	Location	Allocated impairment loss
Factory assets in use	Machineries, software and other	Australia	¥635
Goodwill	Goodwill	Australia	39
Total			¥674

The carrying amount of the factory assets was reduced to its recoverable amount because the recoverable amount is less than the carrying amount. All of the carrying amount of goodwill was also reduced because it became unlikely that the revenue originally expected will be earned.

The book value of factory assets in use has been lowered to the recoverable amount. All of the book value of goodwill has been recognized as impairment loss.

# Note 11:

Short-Term Loans Payable and Long-Term Loans Payable

Information with respect to short-term loans payable at December 31, 2016 and 2015 is as follows:

The average interest rate for the fiscal years ended December 31, 2016 and 2015 is 2.43% and 3.07%, respectively, for short-term loans payable, and 0.00% and 0.16%, respectively, for commercial papers. Bonds payable, long-term loans payable and lease obligations at December 31, 2016 and 2015 comprise the following:

	Millions of yen	
	2016	2015
0.90% Japanese yen notes due 2016	¥ —	¥ 3,000
0.81% Japanese yen notes due 2016	—	5,000
0.53% Japanese yen notes due 2022	10,000	10,000
1.00% Japanese yen notes due 2025	10,000	10,000
0.95% Japanese yen notes due 2036	5,000	_
0.36% Japanese yen notes due 2026	5,000	—
Loans due 2017–2024, with an average interest rate of 0.88%	153,565	201,530
Lease obligations	4,978	5,290
Subtotal	188,543	234,820
Less: current portion of long-term loans payable	(43,647)	(61,630)
Less: current portion of bonds		(8,000)
Less: lease obligations—current	(584)	(572)
Total	¥144,312	¥164,618

The annual maturities of bonds payable, long-term loans payable and lease obligations for the fiscal years subsequent to December 31, 2016 are as follows:

Millions of von

2017	44 224
2017 ¥	44,231
2018	28,421
2019	44,042
2020	19,651
2021	9,727
Thereafter	42,471
Total ¥1	88,543

The amounts of assets pledged as collateral and secured borrowings and loans at December 31, 2016 comprise the following:

	Millions of yen
Assets pledged as collateral:	
Notes and accounts receivable—trade	¥3,488
Inventories	1,753
Property, plant and equipment	561
Total	¥5,802

Secured borrowings and loans: None

# Note 12:

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#### Retirement and Pension Plans

#### (1) Overview of adopted retirement and pension plans

The Company and a number of domestic consolidated subsidiaries have defined benefit pension plans such as a cash balance-style pension plan and retirement plans, and defined contribution pension plans. Some foreign consolidated subsidiaries maintain defined benefit pension plans and defined contribution pension plans. The Company contributes certain available-for-sale securities to the employee retirement benefit trust.

# (2) Defined benefit pension plans (including multi-employer plan)

# Changes in defined benefit obligations

		Millions of yen
	Domestic plans	Foreign plans
As of January 1, 2016	¥97,958	¥152,302
Service cost	2,222	527
Interest cost	774	5,160
Actuarial gains and losses	(642)	10,467
Benefits paid	(5,038)	(6,549)
Past service cost	_	189
Exchange translation differences	_	(16,191)
Other	—	352
As of December 31, 2016	¥95,274	¥146,257

		Millions of yen
	Domestic plans	Foreign plans
As of January 1, 2015	¥95,395	¥166,449
Cumulative effects of changes in accounting policies	3,733	
Restated balance	99,128	166,449
Service cost	2,276	816
Interest cost	782	5,820
Actuarial gains and losses	1,236	(9,389)
Benefits paid	(5,464)	(5,786)
Past service cost	_	29
Exchange translation differences	_	(5,669)
Other	—	32
As of December 31, 2015	¥97,958	¥152,302

# Changes in plan assets

	Millions of yen	
	Domestic plans	Foreign plans
As of January 1, 2016	¥120,430	¥121,882
Expected return on plan assets	3,033	6,129
Actuarial gains and losses	56	9,544
Contributions by the employer	2,663	1,978
Benefits paid	(4,904)	(6,407)
Exchange translation differences		(13,056)
Other	—	185
As of December 31, 2016	¥121,278	¥120,255

		Millions of yen
	Domestic plans	Foreign plans
As of January 1, 2015	¥119,289	¥129,177
Cumulative effects of changes in accounting policies	(17)	—
Restated balance	119,272	129,177
Expected return on plan assets	2,978	7,405
Actuarial gains and losses	(805)	(8,070)
Contributions by the employer	4,368	3,138
Benefits paid	(5,383)	(5,617)
Exchange translation differences	_	(4,176)
Other	_	25
As of December 31, 2015	¥120,430	¥121,882

# Reconciliation of defined benefit obligations and plan assets on retirement benefits recognized in the consolidated balance sheet

	Millions of yen		
		2016	
	Domestic plans	Foreign plans	
Funded defined benefit obligations	¥ 94,164	¥ 145,524	
Plan assets	(121,278)	(120,255)	
Subtotal	(27,114)	25,269	
Unfunded defined benefit obligations	1,110	733	
Net amount of liabilities and assets recognized in consolidated balance sheet	¥ (26,004)	¥ 26,002	
Liabilities (net defined benefit liability)	¥ 2,017	¥ 26,055	
Assets (net defined benefit asset)	(28,021)	(53)	
Net amount of liabilities and assets recognized in consolidated balance sheet	¥ (26,004)	¥ 26,002	

		Millions of yen
		2015
	Domestic plans	Foreign plans
Funded defined benefit obligations	¥ 96,839	¥ 151,839
Plan assets	(120,430)	(121,882)
Subtotal	(23,591)	29,957
Unfunded defined benefit obligations	1,119	463
Net amount of liabilities and assets recognized in consolidated balance sheet	¥ (22,472)	¥ 30,420
Liabilities (net defined benefit liability)	¥ 2,303	¥ 30,530
Assets (net defined benefit asset)	(24,775)	(110)
Net amount of liabilities and assets recognized in consolidated balance sheet	¥ (22,472)	¥ 30,420

#### Retirement benefit expenses and its breakdowns

		Millions of yen
		2016
	Domestic plans	Foreign plans
Service cost	¥ 2,222	¥ 527
Interest cost	774	5,160
Expected return on plan assets	(3,033)	(6,129)
Recognition of actuarial gains and losses	1,119	1,416
Amortization of past service cost		189
Total	¥ 1,082	¥ 1,163

		Millions of yen
		2015
	Domestic plans	Foreign plans
Service cost	¥ 2,276	¥ 816
Interest cost	782	5,820
Expected return on plan assets	(2,978)	(7,405)
Recognition of actuarial gains and losses	1,488	1,759
Amortization of past service cost		29
Total	¥ 1,568	¥ 1,019

#### Past service cost and actuarial gains and losses

The past service cost and actuarial gains and losses recognized in accumulated other comprehensive income as remeasurements of defined benefit plans (amount before income tax effect) for the fiscal years ended December 31, 2016 and 2015 are as follows:

		Millions of yen
		2016
	Domestic plans	Foreign plans
Past service cost	¥ —	¥ 14
Actuarial gains and losses	1,820	7,270
Total	¥1,820	¥7,284

		Millions of yen
		2015
	Domestic plans	Foreign plans
Past service cost	¥ —	¥ 15
Actuarial gains and losses	(705)	5,130
Total	¥(705)	¥5,145

# Unrecognized past service cost and unrecognized actuarial gains and losses

The unrecognized past service cost and unrecognized actuarial gains and losses recognized in accumulated other comprehensive income as remeasurements of defined benefit plans (amount before income tax effect) for the fiscal years ended December 31, 2016 and 2015 are as follows:

		Millions of	yen
		2	016
	Domestic plans	Foreign p	lans
Unrecognized past service cost	¥ —	¥	125
Unrecognized actuarial gains and losses	5,576	(46,4	<b>150)</b>
Total	¥5,576	¥(46,3	325)

		Millions of yen
		2015
	Domestic plans	Foreign plans
Unrecognized past service cost	¥ —	¥ 111
Unrecognized actuarial gains and losses	3,756	(53,720)
Total	¥3,756	¥(53,609)

#### Major breakdown of plan assets

		2016	
	Domestic plans	Foreign plans	
Equity securities	51.7%	27.8%	
Debt securities	21.8%	56.1%	
Other	26.5%	16.1%	
Total	100.0%	100.0%	

Note: 28.5% of the assets of the domestic plans is available-for-sale securities contributed to the employee retirement benefit trust.

		2015
	Domestic plans	Foreign plans
Equity securities	52.5%	26.7%
Debt securities	19.1%	56.2%
Other	28.4%	17.1%
Total	100.0%	100.0%

Note: 28.1% of the assets of the domestic plans are available-for-sale securities contributed to the employee retirement benefit trust.

#### **Actuarial assumptions**

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	Domestic plans	Foreign plans
Discount rate	0.8%	1.3%–4.2%
Expected return rate on plan assets	3.0%	5.5%-6.4%
Expected rate of increase in salary	3.3%	2.0%-3.5%

Note: Expected return rate on plan assets is determined by considering the current and anticipated future portfolio of plan assets and current and anticipated future long-term performance of individual asset classes that comprise the funds' asset mix.

		2015
	Domestic plans	Foreign plans
Discount rate	0.8%	1.5%–4.5%
Expected return rate on plan assets	3.0%	5.5%-6.8%
Expected rate of increase in salary	3.3%	1.9%-3.5%

Note: Expected return rate on plan assets is determined by considering the current and anticipated future portfolio of plan assets and current and anticipated future long-term performance of individual asset classes that comprise the funds' asset mix.

### (3) Defined contribution pension plans

The required contributions borne by the Company and a number of consolidated subsidiaries in relation to the defined contribution pension plans for the fiscal years ended December 31, 2016 and 2015 were ¥1,947 million and ¥2,151 million, respectively.

# Note 13:

# Net Assets

Japanese companies are subject to the Companies Act of Japan (the "Companies Act"). The significant provisions in the Companies Act that affect financial and accounting matters are summarized below:

#### (1) Dividends

Under the Companies Act, companies can pay dividends at any time during the fiscal year in addition to the year-end dividend upon resolution at the shareholders' meeting. For companies that meet certain criteria such as: (a) having the board of directors, (b) having independent auditors, (c) having the board of corporate auditors and (d) the term of service of the directors is prescribed as one year rather than two years of normal term by its articles of incorporation, the board of directors may declare dividends (except for dividends in kind) at

any time during the fiscal year if the company has prescribed so in its articles of incorporation. The Company meets all the above criteria.

The Companies Act permits companies to distribute dividends in kind (non-cash assets) to shareholders subject to a certain limitation and additional requirements.

Semiannual interim dividends may also be paid once a year upon resolution by the board of directors if the articles of incorporation of the company so stipulate. The Companies Act provides certain limitations on the amounts available for dividends or the purchase of treasury shares. The limitation is defined as the amount available for distribution to the shareholders, but the amount of net assets after dividends must be maintained at no less than ¥3 million.

#### (2) Increases/decreases and transfer of common stocks, reserve and surplus

The Companies Act requires that an amount equal to 10% of dividends must be appropriated as a legal reserve (a component of retained earnings) or as additional paid-in capital (a component of capital surplus) depending on the equity account charged upon the payment of such dividends until the total of the aggregate amount of legal reserve and additional paid-in capital equals 25% of the common stock. Under the Companies Act, the total amount of additional paid-in capital and legal reserve may be reversed without limitation. The Companies Act also provides that common stock, legal reserve, additional paid-in capital surplus and retained earnings can be transferred among the accounts under certain conditions upon resolution of the shareholders.

#### (3) Treasury shares and treasury stock acquisition rights

The Companies Act also provides for companies to purchase treasury shares and dispose of such treasury shares by resolution of the board of directors. The amount of treasury shares purchased cannot exceed the amount available for distribution to the shareholders which is determined by a specific formula.

Under the Companies Act, stock acquisition rights, which were previously presented as a liability, are now presented as a separate component of equity.

The Companies Act also provides that companies can purchase both treasury stock acquisition rights and treasury shares. Such treasury stock acquisition rights are presented as a separate component of equity or deducted directly from stock acquisition rights.

# Note 14:

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**Capital Stock** 

The Company retired its treasury shares on January 15, 2016. In addition, the Company implemented the consolidation of shares of common stock by a factor of 10 to 1, with July 1, 2016, as the effective date. As a result, the number of authorized shares as of December 31, 2016 and 2015 are 150,000,000 shares and 1,500,000,000 shares, respectively, and the number of shares issued as of December 31, 2016 and 2015 are 95,156,904 shares and 965,372,048 shares, respectively.

# Note 15:

# **Treasury Shares**

The Company retired its treasury shares on January 15, 2016. In addition, the Company implemented the consolidation of shares of common stock by a factor of 10 to 1, with July 1, 2016, as the effective date. As a result, the number of treasury shares as of December 31, 2016 and 2015 are 356,552 shares and 17,294,751 shares, respectively.



# Note 16:

**Income Taxes** 

The differences between the normal effective statutory tax rate in Japan and the actual effective tax rate for the fiscal years ended December 31, 2016 and 2015 are as follows:

	2016	2015
Normal effective statutory tax rate in Japan	33.1%	35.6%
Adjustments:		
Valuation allowance change	0.6%	1.5%
Tax rate differences	(4.9)%	(4.8)%
Equity in earnings of affiliates	(2.1)%	(1.7)%
Entertainment and other non-deductible expenses	1.8%	2.3%
Elimination of intercompany dividends income	8.0%	5.4%
Dividends income and other non-taxable income	(6.5)%	(6.5)%
State, provincial, municipal and local taxes	0.5%	0.5%
Tax credit for research and development and others	(2.4)%	(3.8)%
Adoption of FIN48	(0.9)%	(0.9)%
Tax credit for the Special Tax Law for the March 11 Earthquake	(0.4)%	(0.4)%
Other	(2.1)%	5.2%
Actual effective tax rate	24.7%	32.4%

The tax effects of significant temporary differences and loss carryforwards, which resulted in deferred tax assets and liabilities, as of December 31, 2016 and 2015 are as follows:

	Millions of yen	
	2016	2015
Deferred tax assets:		
Inventories	¥ 4,131	¥ 4,472
Property, plant and equipment	3,061	3,540
Allowance for doubtful accounts	1,840	1,821
Net defined benefit liability	8,712	9,783
Restructuring and divestitures	262	441
Unrealized gain	958	985
Net operating loss carryforwards	27,425	24,493
Other	25,176	29,115
Subtotal	71,565	74,650
Less: valuation allowance	(19,052)	(16,639)
Total	52,513	58,011
Deferred tax liabilities:		
Deferred income taxes related to gains from property, plant and equipment	(3,012)	(3,392)
Property, plant and equipment	(3,797)	(4,653)
Contribution of securities to employee retirement benefit trust	(1,692)	(1,786)
Net defined benefit asset	(1,008)	_
Other	(6,013)	(6,656)
Total	(15,522)	(16,487)
Net deferred tax assets	¥ 36,991	¥ 41,524

#### Influence from changes in corporation tax rate

As a result of the "Act for Partial Amendment of the Income Tax Act" (Act No. 15 of 2016) and the "Act for Partial Amendment of the Local Tax Act" (Act No. 13 of 2016) passed in the Diet on March 29, 2016, the normal effective statutory tax rate used to calculate deferred tax assets or liabilities changed from 32.3% to 30.9% for those temporary differences expected in fiscal years 2017 and 2018, and to 30.6% for those temporary differences expected after fiscal year 2019.

Consequently, deferred tax assets decreased by ¥173 million and deferred tax liabilities decreased by ¥465 million. Additionally, income taxes–deferred (credit) recognized in the fiscal year ended December 31, 2016 increased by ¥76 million, valuation difference on available-for-sale securities (credit) increased by ¥126 million, deferred gains or losses on hedges (debit) increased by ¥5 million and remeasurements of defined benefit plans (credit) increased by ¥95 million.

# Note 17:

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Research and Development Costs

Research and development costs charged to income for the fiscal years ended December 31, 2016 and 2015 are ¥11,206 million and ¥12,163 million, respectively.

# Note 18:

Leases

#### **Operating leases**

Future minimum rental payments under non-cancellable operating leases at December 31, 2016 and 2015 are as follows:

N 4111

	IVIIIIOns of yen	
	2016	2015
Due within one year	¥2,509	¥2,645
Due after one year	6,576	6,821
Total	¥9,085	¥9,466

# Note 19:

Financial Instruments

# Group policy for financial instruments

The Group manages funds with safe and secure financial assets. Means of financings include direct financing such as the issuance of bonds and commercial papers and liquidation of receivables, as well as indirect financing such as short- and long-term bank borrowings, the terms of which are determined based on financial market conditions and balance of account at the time.

#### Nature and extent of risks arising from financial instruments

Receivables such as notes and accounts receivable–trade are exposed to customer credit risk. In addition, some of such receivables are denominated in foreign currencies and are exposed to the market risk of fluctuation in foreign currency exchange rates. Investment securities, mainly the stocks of customers and suppliers, are exposed to the risk of market price fluctuations.

Payment terms of payables, such as notes and accounts payable–trade, are less than one year. In addition, some of such payables are denominated in foreign currencies and are exposed to the market risk of fluctuation in foreign currency exchange rates.

Funds needed for operations are mainly procured as short-term loans payable, whereas funds needed for capital expenditure and investment are mainly procured as long-term loans payable, bonds payable and lease obligations with regard to finance lease transactions. A part of such bank loans, bonds and lease obligations are exposed to market risks from changes in variable interest rates. Trade accounts payable and loans payable of the Company are also exposed to liquidity risk that the Company cannot meet its contractual obligations in full on maturity dates.

### **Risk management for financial instruments**

The Company manages its credit risk from trade notes and accounts receivable on the basis of internal guidelines, which include the monitoring of payment terms and balances of customers by the sales and business administration departments to identify the default risk of customers at an early stage. The consolidated subsidiaries of the Company manage the exposure to credit risk on their own in accordance with their internal guidelines. Investment securities are managed by monitoring market values, the financial position of issuers and considering the relationship with customers and suppliers on a regular basis. The Group also tries to mitigate liquidity risk by arranging lines of credit with financial institutions, along with adequate financial planning.

# Fair value of financial instruments

The following tables present the carrying amounts and the fair value of financial instruments at December 31, 2016 and 2015. Financial instruments whose fair value is not reliably measured are excluded from the tables below.

	Millions of yen		
			2016
	Carrying amount	Fair value	Difference
Assets:			
Cash and deposits	¥ 17,241	¥ 17,241	¥ —
Notes and accounts receivable—trade	215,369	215,369	—
Investment securities			
Stocks of subsidiaries and affiliates	2,364	5,579	3,215
Other	15,888	15,888	_
Total	¥250,862	¥254,077	¥3,215
Liabilities:			
Notes and accounts payable—trade	¥ 94,392	¥ 94,392	¥ —
Short-term loans payable	52,744	52,744	
Current portion of long-term loans payable	43,647	43,863	216
Lease obligations (current)	584	584	
Income taxes payable	4,153	4,153	
Bonds payable	30,000	30,075	75
Long-term loans payable	109,918	110,136	218
Lease obligations (non-current)	4,394	4,827	433
Total	¥339,832	¥340,774	¥ 942
Derivative financial instruments: (Note)			
Hedge accounting—not applied	¥ 472	¥ 472	¥ —
Hedge accounting—applied	(266)	(266)	
Total	¥ 206	¥ 206	¥ —

			Millions of yen
			2015
	Carrying amount	Fair value	Difference
Assets:			
Cash and deposits	¥ 15,363	¥ 15,363	¥ —
Notes and accounts receivable—trade	221,006	221,006	_
Investment securities			
Stocks of subsidiaries and affiliates	1,899	4,880	2,981
Other	13,848	13,848	
Total	¥252,116	¥255,097	¥2,981
Liabilities:			
Notes and accounts payable—trade	¥ 95,569	¥ 95,569	¥ —
Short-term loans payable	20,632	20,632	—
Current portion of long-term loans payable	61,630	61,896	266
Commercial papers	4,000	4,000	_
Current portion of bonds	8,000	8,041	41
Lease obligations (current)	572	572	_
Income taxes payable	8,347	8,347	_
Bonds payable	20,000	20,127	127
Long-term loans payable	139,900	140,412	512
Lease obligations (non-current)	4,718	5,058	340
Total	¥363,368	¥364,654	¥1,286
Derivative financial instruments: (Note)			
	V F02	V 502	V
Heage accounting—not applied	¥ 593	¥ 593	¥ —
Hedge accounting—applied	(89)	(89)	

Note: Figures are net of debts and credits that arise from derivative financial instruments. Net debt amounts are indicated in parentheses.

¥

504

¥

504

¥

The valuation techniques used to estimate the fair value of financial instruments and information on the marketable securities and derivative financial instruments are as follows:

# Assets

#### Cash and deposits and notes and accounts receivable-trade

The fair value of cash and deposits and notes and accounts receivable–trade approximates their carrying amounts as these amounts are settled in a short period of time.

#### Investment securities

Total

The fair value of investment securities is measured at the quoted market price on the stock exchange.

#### Liabilities

#### Notes and accounts payable-trade, short-term loans payable and income taxes payable

The fair value of these accounts approximates their carrying amounts as these amounts are settled in a short period of time.

#### Current portion of long-term loans payable and long-term loans payable

For long-term loans payable bearing a floating interest rate, the fair value of those subject to special treatment of interest rate swaps are based on present value by totaling the amount of principal and interest, together with related interest rate swaps, discounted by the interest rate that would apply if equivalent long-term loans were newly entered into. The fair value of other long-term loans payable for which a floating interest rate is applied approximates their carrying amount, due to the fact that the market rate of interest is quickly factored in while credit status of the Company remains unchanged.

On the other hand, the fair value of long-term loans payable for which a fixed interest rate is applied is determined by discounting the cash flows related to the long-term loans payable. The discount rate applied for

the calculation above is the interest rate that may be currently available to the Group for loans payable with similar terms and conditions.

#### Bonds payable

As for bonds payable which has observable market prices, the fair value is measured using the quoted market prices.

#### Lease obligations (current) and lease obligations (non-current)

The fair value of these accounts is determined by discounting the cash flows related to the lease obligations. The discount rate applied for the calculation above is the interest rate that may be currently available to the Group for lease obligations with similar terms and conditions.

#### **Derivative financial instruments**

Please see Note 20 "Derivative Financial Instruments" for more information.

#### Financial instruments whose fair value is not reliably measured

There are no market prices for non-listed stocks and others (carrying amounts as of December 31, 2016 and 2015 are ¥22,755 million and ¥21,328 million, respectively) whose future cash flows cannot be estimated. The fair value of such non-listed stocks and others is not reliably determinable and thus is excluded from investment securities.

# Redemption schedule for financial assets and securities

The redemption schedules for financial assets and securities with contractual maturities as of December 31, 2016 and 2015 are summarized as follows:

				Millions of yen
				2016
		More than 1 year	More than 5 years	More than
	1 year or less	but less than 5 years	but less than 10 years	10 years
Notes and accounts receivable—trade	¥215,369	¥—	¥—	¥—
Total	¥215,369	¥—	¥—	¥—

				Millions of yen
				2015
		More than 1 year	More than 5 years	More than
	1 year or less	but less than 5 years	but less than 10 years	10 years
Notes and accounts receivable—trade	¥221,006	¥—	¥—	¥—
Total	¥221,006	¥—	¥—	¥—

# Repayment schedule for bonds payable, long-term loans payable and other interest-bearing debt

The repayment schedules for bonds payable, long-term loans payable and other interest-bearing debt with contractual maturities as of December 31, 2016 and 2015 are summarized as follows:

				Millions of yen
				2016
		More than 1 year	More than 5 years	More than
	1 year or less	but less than 5 years	but less than 10 years	10 years
Short-term loans payable	¥52,744	¥ —	¥ —	¥ —
Current portion of long-term loans payable	43,647	—	—	—
Lease obligations (current)	584	_	_	_
Bonds payable	_		25,000	5,000
Long-term loans payable	—	99,878	10,040	—
Lease obligations (non-current)		1,963	2,270	161
Total	¥96,975	¥101,841	¥37,310	¥5,161

				Millions of yen
				2015
	1	More than 1 year	More than 5 years	More than
	T year or less	but less than 5 years	but less than 10 years	TO years
Short-term loans payable	¥20,632	¥ —	¥ —	¥ —
Current portion of long-term loans payable	61,630	—	—	—
Commercial papers	4,000	—	—	—
Current portion of bonds	8,000	_	_	_
Lease obligations (current)	572	—	—	—
Bonds payable	_	_	20,000	_
Long-term loans payable	—	129,877	10,023	—
Lease obligations (non-current)	_	1,983	2,271	464
Total	¥94,834	¥131,860	¥32,294	¥464

# **Note 20:**

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Derivative Financial Instruments

The Group has entered into various foreign currency forward contracts, currency options and swaps, and commodity swaps.

Foreign currency forward contracts and currency options and swaps are entered into to hedge the effects of exchange rate changes on receivables and payables or anticipated transactions denominated in foreign currencies. Interest rate swaps are entered into to hedge the effects of interest rate changes and to reduce financing cost. Commodity swaps are entered into to hedge the effects of commodity price changes of fuel. Loans denominated in foreign currencies are entered into to hedge a part of risks associated with the fluctuations of exchange rates for investments in foreign entities.

The Group does not use derivative instruments for trading or speculative purposes. Derivative transactions performed by the Group have risks due to fluctuations of exchange rates, interest rates and other factors.

Because these transactions are executed with creditworthy financial institutions, the Group does not anticipate the likelihood of any losses resulting from default by the counterparties to these agreements.

Internal regulation for managing derivative transactions has been established for the purpose of risk control in the Company, and all derivative transactions are performed under this regulation.

The execution of derivative transactions is carried out by the Company's finance department, and the management of risk is monitored by the Company's accounting department. Transactions are periodically reported to the board of directors by the officer in charge of the Finance and Accounting Division.

Consolidated subsidiaries execute transactions in accordance with their regulations for derivative management and periodically report the results of those transactions to the Company. Derivative transactions to which hedge accounting is not applied at December 31, 2016 and 2015 (1) Currency related

				Millions of yen
-				2016
	Contract/notional amount	Contract/notional amount due after one year	Fair value	Unrealized gain/loss
Currency swaps: (Note 1)				
(Payment in H.K.\$ and receipt in U.S.\$)	¥ 855	¥855	¥ 88	¥ 16
(Payment in Japanese yen and receipt in Korean won)	818	—	(18)	(18)
Other	100	—	1	1
Currency options: (Note 1)				
Selling				
GB pound	277	_	1	(1)
Buying				
U.S.\$	7,835	—	356	337
Foreign currency forward contracts: (Note 2)				
Selling				
Russian ruble	4,638		(52)	49
Canadian \$	1,573		6	(5)
Other	2,075	—	1	(1)
Buying				
U.S.\$	3,694		97	94
Euro	1,029		(3)	(3)
Other	360		(5)	(5)
Total	¥23,254	¥855	¥472	¥464

				Millions of yen
				2015
	Contract/notional amount	Contract/notional amount due after one year	Fair value	Unrealized gain/loss
Currency swaps: (Note 1)		y		5
(Payment in H.K.\$ and receipt in U.S.\$)	¥ 882	¥882	¥(73)	¥ (36)
(Payment in Japanese yen and receipt in Korean won)	827	_	(4)	(4)
Other				
Currency options: (Note 1)				
Selling				
Euro	526	—	(2)	2
Buying				
U.S.\$	12,476	—	374	376
Euro	2,546	—	44	44
Foreign currency forward contracts: (Note 2)				
Selling				
Russian ruble	3,579	—	104	(104)
Canadian \$	1,588	—	8	(8)
Other	1,596		(78)	78
Buying				
U.S.\$	5,389	_	170	171
Euro	1,268	_	50	50
Total	¥30,677	¥882	¥593	¥ 569

Notes: 1. The fair value of currency swaps and currency options is measured using the quoted price obtained from financial institutions. Currency options used are called collar options, which effectively limit the risk arising from the changes in exchange rate by the combination of buying call options and selling put options, or selling call options and buying put options.

2. The fair value of foreign currency forward contracts is measured using the forward quotation.

Derivative transactions to which hedge accounting is applied at December 31, 2016 and 2015 (1) Currency related

				Millions of yen
				2016
	Hedged item	Contract/notional amount	Contract/notional amount due after one year	Fair value
Foreign currency forward contracts: (Note 1	)			
Selling				
Euro	Forecast	¥ 178	¥ —	¥ (6)
U.S.\$	transaction	3,973		(292)
Buying				
U.S.\$	Accounts payable—trade	76		2
Foreign currency forward contracts: (Notes 1 and 2)				
Selling				
U.S.\$	Accounts	2,613	—	
Euro	receivable-trade	324	—	
Buying				
Chinese yuan	Loans payable	451	—	
Currency swaps: (Notes 1 and 2)				
(Payment in Japanese yen and receipt in U.S.\$)	Loans payable	38,913	11,847	
Total		¥46,528	¥11,847	¥(296)

				Millions of yen
				2015
	Hedged item	Contract/notional amount	Contract/notional amount due after one year	Fair value
Currency swaps: (Note 1)				
(Payment in Australia \$ and receipt in Singapore \$)		¥ 510	¥ —	¥ 10
(Payment in New Zealand \$ and receipt in Singapore \$)	- Loans receivable	276	_	(14)
Foreign currency forward contracts: (Note 1)	)			
Selling				
Euro	Forecast transaction	217	_	(1)
U.S.\$		58	_	2
Buying				
U.S.\$	Accounts	270		(3)
Chinese yuan	payable-trade	1		0
Foreign currency forward contracts: (Notes 1 and 2)				
Selling				
U.S.\$	Accounts	4,397	_	
Euro	receivable-trade	355	—	
Buying				
Chinese yuan	Loans payable	3,203	—	
Currency swaps: (Notes 1 and 2)				
(Payment in Japanese yen and receipt in U.S.\$)	Loans payable	11,847	11,847	
Total		¥21,134	¥11,847	¥ (6)

Notes: 1. The fair value of currency swaps and foreign currency forward contracts is measured using the quoted price obtained from financial institutions.

2. Exchange contracts and currency swaps appropriated to specific debts and credits are settled together with either accounts receivable–trade or loans payable subject to hedged transaction. Accordingly, the fair value of such exchange contracts is reflected in accounts receivable–trade or loans payable.

## (2) Interest related

			Millions of yen
			2016
Hedred item		Contract/notional	
neugeuttern	Contract/notional	amount due after	
	amount	one year	Fair value
Interest rate swaps: (Note)			
(Fixed rate payment, floating rate receipt) Loans payable	¥46,838	¥15,000	
(Floating rate payment, floating rate receipt)	1,000	—	
Total	¥47,838	¥15,000	¥—

Note: If interest rate swaps qualify for hedge accounting and meet certain specific criteria, they are settled together with loans payable subject to hedged transaction. Accordingly, the fair value of such interest rate swaps is reflected in loans payable.

				Millions of yen
				2015
	Hedged item	Contract/notional	Contract/notional amount due after	
		amount	one year	Fair value
Interest rate swaps: (Note 1) (Fixed rate payment, floating rate receipt)	Loans payable	¥ 341	¥ —	¥ (6)
Interest rate options: (Note 2) Buying	Loans payable	6,538		(32)
Interest rate swaps: (Note 3) (Fixed rate payment, floating rate receipt) (Floating rate payment, floating rate receipt)	Bonds payable, loans payable	50,582 6,000	35,541 5,000	
Total		¥63,461	¥40,541	¥(38)

Notes: 1. The fair value of interest rate swaps is measured using the quoted price obtained from financial institutions.

2. Interest rate options used are called collar options, which effectively limit the risk arising from the changes in interest rates by the combination of buying call options and selling put options.

3. If interest rate swaps qualify for hedge accounting and meet certain specific criteria, they are settled together with either bonds payable or loans payable subject to hedged transaction. Accordingly, the fair value of such interest rate swaps is reflected in bonds payable and loans payable.

# (3) Commodity related

				Millions of yen
				2016
	Hedged item		Contract/notional	
	neugeu nem	Contract/notional	amount due after	
		amount	one year	Fair value
Commodity swaps: (Note)	Fuel	V10F	VE 1	V20
(Fixed price payment, floating price receipt)	Fuel	¥ 195	¥01	¥30
Total		¥195	¥51	¥30

				Millions of yen
				2015
	Hedged item	Contract/notional	Contract/notional amount due after	
		amount	one year	Fair value
Commodity swaps: (Note) (Fixed price payment, floating price receipt)	Fuel	¥104	¥—	¥(45)
Total		¥104	¥—	¥(45)

Note: The fair value of commodity swaps is measured using the quoted price obtained from the exchange.

# Note 21:

Commitments and Contingent Liabilities

Contingent liabilities at December 31, 2016 and 2015 are as follows:

		Millions of yen
	2016	2015
Trade notes endorsed	¥178	¥ 200
Trade notes discounted with banks	29	_
Liabilities for guarantee and other	771	881
Total	¥978	¥1,081

In the opinion of management, the eventual settlement of pending lawsuits in which any of the companies in the Group is the defendant will not have a material effect on the consolidated financial position or consolidated results of operations of the Group.



# Note 22:

Other Comprehensive Income

Each component of other comprehensive income and related tax effects (including those on non-controlling interests) for the fiscal years ended December 31, 2016 and 2015 comprises the following:

		Millions of yen
	2016	2015
Valuation difference on available-for-sale securities:		
Gains (losses) arising during the year	¥ 2,303	¥ 1,074
Reclassification adjustments to profit (loss)	(123)	(39)
Amount before income tax effect	2,180	1,035
Income tax effect	(571)	(190)
Total	1,609	845
Deferred gains or losses on hedges:		
Gains (losses) arising during the year	(31)	131
Reclassification adjustments to profit (loss)	(148)	137
Amount before income tax effect	(179)	268
Income tax effect	67	(166)
Total	(112)	102
Foreign currency translation adjustment:		
Adjustments arising during the year	(18,179)	(14,440)
Reclassification adjustments to profit (loss)		(83)
Amount before income tax effect	(18,179)	(14,523)
Total	(18,179)	(14,523)
Remeasurements of defined benefit plans:		
Adjustments arising during the year	6,380	1,164
Reclassification adjustments to profit (loss)	2,724	3,276
Amount before income tax effect	9,104	4,440
Income tax effect	(2,838)	(880)
Total	6,266	3,560
Share of other comprehensive income of associates accounted for using equity method:		
Gains (losses) arising during the year	(972)	(1,194)
Reclassification adjustments to profit (loss)	7	(115)
Total	(965)	(1,309)
Total other comprehensive income	¥(11,381)	¥(11,325)



# Note 23:

Subsequent Events (1) At the Company's annual meeting of shareholders held on March 29, 2017, the shareholders approved the following appropriations of retained earnings:

	Millions of yen
Cash dividends, ¥60.00 per share	¥5,688
Total	¥5,688

(2) At a meeting of its board of directors on January 25, 2017, the Company resolved to enter into a capital and business alliance with TAIYO HOLDINGS CO., LTD., as a result of which TAIYO HOLDINGS CO., LTD. would become an equity-method affiliate of the Company. A capital and business alliance agreement between the companies was concluded on the same day. The Company acquired shares on February 10, 2017.

# Purpose of the capital and business alliance

The Company and TAIYO HOLDINGS CO., LTD. aim to increase the benefits to be gained by bringing together the former's materials development capabilities, which draw on core technologies cultivated over many years, and the latter's firm understanding of market needs, which reflect an extensive supply chain from solder resist to printed writing boards.

# Name of the entity from which the Company acquired shares

TAIYO HOLDINGS CO., LTD.

# Name, principal businesses and stated capital of the entity of which the Company acquired shares

(i) Name	TAIYO HOLDINGS CO., LTD.
(ii) Principal businesses	Manufacture and sale, as well as purchase and sale, of chemical products for use in
	electronics components
(iii) Stated capital	¥6,265 million (as of December 31, 2016)
Date of share acquisit	ion

February 10, 2017

#### Number of shares acquired by the Company, cost of acquisition and rate of voting rights acquired

(i) Number of shares acquired		5,617,300
	New shares:	1,312,600 shares (common stock)
	Treasury shares:	4,304,700 shares (common stock)
(ii) Cost of acquisition	¥24,873 million	
(iii) Ration of voting rights acquired	19.50%	

# Funding and method of payment

The Company paid by its own funds and loans.

# Note 24:

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# Segment Information

# (1) Segment information

# **Description of reportable segments**

The reportable segments of the Group are components for which discrete financial information is available and whose operating results are regularly reviewed by the board of directors to evaluate their performance and determine the allocation of management resources.

The Group has seven product divisions, namely "Printing Inks," "Pigments," "Liquid Crystal Materials," "Polymers," "Liquid Compounds," "Solid Compounds" and "Application Materials," and each product division conducts its business.

The product divisions are aggregated into five reportable segments, namely "Printing Inks," "Fine Chemicals," "Polymers," "Compounds" and "Application Materials," based on the similarity of the products and services.

"Printing Inks" mainly consists of gravure inks, offset inks and news inks. "Fine Chemicals" mainly consists of organic pigments and liquid crystal materials. "Polymers" mainly consists of synthetic resins, such as acrylic, polyurethane, epoxy and polystyrene resins. "Compounds" mainly consists of polyphenylene sulfide (PPS) compounds, jet inks and plastic colorants. "Application Materials" mainly consists of industrial adhesive tapes and health foods.

# Methods of measurement for the amounts of sales, profit (loss), assets, liabilities and other items for each reportable segment

The accounting policies of each reportable segment are consistent with those disclosed in Note 2 "Summary of Significant Accounting Policies."

Segment profits are based on operating income.

Intersegment sales are mainly based on market price or cost of goods manufactured.

# Information about sales, profit (loss), assets, liabilities and other items

							М	llions of yen
								2016
			ble Segment					
	Printing	nting Fine Application						
	Inks	Chemicals	Polymers	Compounds	Materials	Total	Others	Total
Sales:								
Sales to customers	¥365,189	¥ 91,642	¥177,158	¥61,056	¥55,614	¥750,659	¥ 779	¥751,438
Intersegment sales		36,534	3,777	63	61	40,435		40,435
Total sales	365,189	128,176	180,935	61,119	55,675	791,094	779	791,873
Segment profit	18,363	14,430	19,642	4,975	1,867	59,277	45	59,322
Segment assets	¥312,608	¥ 99,280	¥195,521	¥64,499	¥53,732	¥725,640	¥37,558	¥763,198
Others:								
Depreciation and amortization	12,485	4,807	7,435	4,277	2,249	31,253	402	31,655
Amortization of goodwill	42	133	164	4		343	30	373
Investments in affiliates	1,164	1,015	17,115		1,417	20,711	2,365	23,076
Increase in property, plant and equipment and intangible assets	10,531	3,859	8,725	4,577	1,984	29,676	357	30,033

							М	illions of yen
								2015
		Reportable Segment						
	Printing Fine Application							
	Inks	Chemicals	Polymers	Compounds	Materials	Total	Others	Total
Sales:								
Sales to customers	¥412,576	¥ 94,232	¥191,125	¥63,541	¥57,438	¥818,912	¥ 1,087	¥819,999
Intersegment sales		41,298	3,495	28	64	44,885		44,885
Total sales	412,576	135,530	194,620	63,569	57,502	863,797	1,087	864,884
Segment profit	18,988	13,119	15,974	5,739	2,099	55,919	77	55,996
Segment assets	¥322,779	¥104,601	¥196,005	¥62,208	¥55,490	¥741,083	¥33,923	¥775,006
Others:								
Depreciation and amortization	12,553	4,811	7,911	4,315	2,065	31,655	518	32,173
Amortization of goodwill	135	148	151	13		447	30	477
Investments in affiliates	1,160	1,118	16,509		1,370	20,157	1,898	22,055
Increase in property, plant and equipment and intangible assets	9,851	4,794	7,838	4,097	4,019	30,599	642	31,241

# Reconciliation between reportable segment total and amounts disclosed in consolidated financial statements

2016   Sales: 4   Reportable segment total ¥791,094   Sales in "Others" 779	illions of yen
Sales: ¥791,094   Reportable segment total ¥791,094   Sales in "Others" 779	2015
Reportable segment total¥791,094Sales in "Others"779	
Sales in "Others" 779	¥863,797
	1,087
Elimination of intersegment transactions (40,435)	(44,885)
Sales in consolidated financial statements¥751,438	¥819,999

	1	Millions of yen
	2016	2015
Profit:		
Reportable segment total	¥59,277	¥55,919
Profit in "Others"	45	77
Corporate expenses	(5,140)	(4,928)
Operating income in consolidated financial statements	¥54,182	¥51,068

Note: Corporate expenses consist substantially of R&D expenses incurred by the DIC Central Research Laboratories to develop new products, which is not included in reportable segment.

	Millions of ye		
	2016	2015	
Assets:			
Reportable segment total	¥725,640	¥741,083	
Assets in "Others"	37,558	33,923	
Elimination between segments	(38,942)	(34,073)	
Corporate assets	40,572	37,924	
Assets in consolidated financial statements	¥764,828	¥778,857	

Note: Corporate assets consist of deferred tax assets and assets of the DIC Central Research Laboratories and Kawamura Memorial DIC Museum of Art, which is not included in reportable segment.

#### Other items are as follows:

									N	Iillions of yen
		2016								2015
	Reportable						Reportable			
	Segments		Others	Adjust	ments	Consolidated	Segments	Others	Adjustments	Consolidated
Depreciation and amortization	¥31,253	¥	402	¥	789	¥32,444	¥31,655	¥ 518	¥713	¥32,886
Amortization of goodwill	343		30			373	447	30	_	477
Investments in affiliates	20,711		2,365		_	23,076	20,157	1,898	_	22,055
Increase in property, plant and equipment and										
intangible assets	29,676		357		1,246	31,279	30,599	642	847	32,088
~										

Notes: 1. The adjustments for depreciation and amortization are mainly depreciation and amortization related to the DIC Central Research Laboratories that cannot be allocated to any reportable segment.

2. The adjustments for increase in property, plant and equipment and intangible assets are mainly capital investments of the DIC Central Research Laboratories that cannot be allocated to any reportable segment.

#### New corporate organization introduced

Effective from January 1, 2016, the Company revised its segmentation to coincide with the launch of its mediumterm management plan, DIC108. Accordingly, certain figures for the fiscal year ended December 31, 2015, have been restated.

#### (2) Related information

#### Information about geographical areas

				Millions of yen
				2016
	Japan	USA	Others	Total
Net sales (Note)	¥282,457	¥97,898	¥371,083	¥751,438
Property, plant and equipment	121,982	28,360	76,318	226,660

				Millions of yen
				2015
	Japan	USA	Others	Total
Net sales (Note)	¥286,283	¥112,320	¥421,396	¥819,999
Property, plant and equipment	119,193	31,611	82,341	233,145

Note: Net sales is based on customer location and is classified by country.

# Information about major customers

Not applicable for the fiscal years ended December 31, 2016 and 2015, because there is no single customer which accounts for more than 10% of net sales shown on the consolidated statement of income.

#### (3) Impairment loss of assets by reportable segment

There was no impairment loss of assets for the fiscal year ended December 31, 2016.

							1	Villions of yen
								2015
		Fine		Application Corporate and				
	Printing Inks	Chemicals	Polymers	Compounds	Materials	Others	eliminations	Consolidated
Impairment loss	¥674	¥—	¥—	¥—	¥—	¥—	¥—	¥674

# (4) Amortization and unamortized balances of goodwill by reportable segment

							1	Millions of yen
								2016
		Fine			Application		Corporate and	
	Printing Inks	Chemicals	Polymers	Compounds	Materials	Others	eliminations	Consolidated
Amortization	¥42	¥133	¥164	¥ 4	¥—	¥30	¥—	¥373
Unamortized balances	73	128	240	_	_	60	_	501

							1	Millions of yen
								2015
		Fine		Application Corporate and				
	Printing Inks	Chemicals	Polymers	Compounds	Materials	Others	eliminations	Consolidated
Amortization	¥135	¥148	¥151	¥13	¥—	¥30	¥—	¥477
Unamortized balances	135	273	404	4	_	90	_	906

# (5) Gain on bargain purchase by reportable segment

There was no gain on bargain purchase for the fiscal year ended December 31, 2015.

							ľ	Villions of yen
								2016
		Fine		Application Corporate and				
	Printing Inks	Chemicals	Polymers	Compounds	Materials	Others	eliminations	Consolidated
Gain on bargain purchase	¥—	¥—	¥78	¥—	¥—	¥—	¥—	¥78

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Note: Gain on bargain purchase comes from the acquisition of a subsidiary.

# Note 25:

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Related-Party Transactions

# (1) Related-party transactions with the Company

Related-party transactions with directors, corporate auditors, major individual shareholders and others of the Company for the fiscal years ended December 31, 2016 and 2015, are as follows:

									Millio	ns of yen	
Sort of related party	Name	Location	Capital or invest- ment	Principal business	Ownership of voting rights	Relation with related parties	Contents of transaction	Amount of trans- action (Note 1)	Account	2016 Balance at year- end (Note 2)	
Companies where directors and their close	Nissei Real-Estate Co., Ltd.	Chiyoda- ku, Tokyo	10	Rental of properties and others	Owned Direct 5.61% Indirect 7.81%	Rental of buildings and others	Payment of rent for buildings and others (Note 4)	2,083	Security deposit	1,777	
close relatives Da owned a Da majority of the voting rights (Note 3)	Dainichi Can Chi Co., Ltd. ku,	Dainichi Can Chiyoda- 10 Co., Ltd. ku, Tokyo	Can Chiyoda- 10 . ku, Tokyo	10	Manufacture and sale of metallic containers	Owned Direct 4.50%	Purchase of metallic containers and others	Purchase of metallic containers and others (Note 5)	481	Trade notes and accounts payable, and other accounts payable	187
							Sales of merchandise and finished goods, and offering of service (Note 6)	55	Trade notes and accounts receivable	21	
	Nissin Trading Co., Ltd.	Chiyoda- ku, Tokyo	20	Sale, import and export of petrochemical- related products	Owned Direct 3.31%	Purchase of raw materials and others	Purchase of raw materials and others (Note 7)	4,882	Trade notes and accounts payable, and other accounts payable	1,142	
							Sales of merchandise and finished goods, and offering of service (Note 6)	3,741	Trade accounts receivable and other accounts receivable	1,373	

Notes: 1. Excluding consumption taxes.

2. Including consumption taxes.

3. Yoshihisa Kawamura, a director of the Company, and his close relatives substantially own a majority of the voting rights.

Dainichi Can Co., Ltd. and Nissin Trading Co., Ltd. are fully owned by Nissei Real-Estate Co., Ltd.

4. Rent of buildings and others is determined based on an arms-length transaction in the neighboring area.

5. "Purchase of metallic containers and others" is determined based on an arms-length transaction.

6. "Sales of merchandise and finished goods, and offering of service" is determined on an arms-length transaction.

7. "Purchase of raw materials and others" is determined on an arms-length transaction.

									Millio	ns of yen
										2015
Sort of related party	Name	Location	Capital or invest- ment	Principal business	Ownership of voting rights	Relation with related parties	Contents of transaction	Amount of trans- action (Note 1)	Account	Balance at year- end (Note 2)
Companies where directors and their close	Nissei Real-Estate Co., Ltd.	Chiyoda- ku, Tokyo	10	Rental of properties and others	Owned Direct 5.61% Indirect 7.81%	Rental of buildings and others	Payment of rent for buildings and others (Note 4)	2,171	Security deposit	1,778
relatives owned a majority of the voting rights (Note 3)	Dainichi Can Cl Co., Ltd. ku	Dainichi Can Chiyoda- Co., Ltd. ku, Tokyo	- 10 o	Manufacture and sale of metallic containers	Owned Direct 4.50%	Purchase of metallic containers and others	Purchase of metallic containers and others (Note 5)	559	Trade accounts payable and other accounts payable	203
							Sales of merchandise and finished goods, and offering of service (Note 6)	108	Trade notes and accounts receivable	23
	Nissin Trading Co., Ltd.	Chiyoda- ku, Tokyo	20	Sale, import and export of petrochemical- related products	Owned Direct 3.31%	Purchase of raw materials and others	Purchase of raw materials and others (Note 7)	5,673	Trade notes and accounts payable, and other accounts payable	1,451
							Sales of merchandise and finished goods, and offering of service (Note 6)	3,637	Trade accounts receivable	1,363

Notes: 1. Excluding consumption taxes.

2. Including consumption taxes.

Yoshihisa Kawamura, a director of the Company, and his close relatives substantially own a majority of the voting rights. Dainichi Can Co., Ltd. and Nissin Trading Co., Ltd. are fully owned by Nissei Real-Estate Co., Ltd.

4. Rent of buildings and others is determined based on an arms-length transaction in the neighboring area.

5. "Purchase of metallic containers and others" is determined based on an arms-length transaction.

6. "Sales of merchandise and finished goods, and offering of service" is determined on an arms-length transaction.

7. "Purchase of raw materials and others" is determined on an arms-length transaction.

# (2) Related-party transactions with the consolidated subsidiaries

Related-party transactions with directors, corporate auditors, major individual shareholders and others of the Company for the fiscal years ended December 31, 2016 and 2015, are as follows:

									Millio	ns of yen	
Sort of related party	Name	Location	Capital or invest- ment	Principal business	Ownership of voting rights	Relation with related parties	Contents of transaction	Amount of trans- action (Note 1)	Account	Balance at year- end (Note 2)	
Companies where directors	Nissei Real-Estate Co., Ltd.	Chiyoda- ku, Tokyo	10	Rental of properties and others	Owned Indirect 13.42%	Rental of buildings and others	Payment of rent for buildings and others (Note 4)	16	Security deposit	8	
and their close relatives owned a majority of the voting rights (Note 3)	Dainichi Can Co., Ltd.	Dainichi Can Chiyoda- Co., Ltd. ku, Tokyo	10	Manufacture and sale of metallic containers	Owned Indirect 4.50%	Purchase of metallic containers and others	Purchase of metallic containers and others (Note 5)	641	Trade notes and accounts payable, and other accounts payable	172	
							Sales of merchandise and finished goods, and offering of service (Note 6)	56	Trade notes and accounts receivable	24	
	Nissin Chiyo Trading ku, To Co., Ltd.	Chiyoda- ku, Tokyo	Chiyoda- ku, Tokyo	20	20 Sale, import and export of petrochemical- related products	Owned Indirect 3.31%	Purchase of raw materials and others	Purchase of raw materials and others (Note 7)	690	Trade notes and accounts payable, and other accounts payable	164
							Sales of merchandise and finished goods, and offering of service (Note 6)	387	Trade accounts receivable and other accounts receivable	132	

Notes: 1. Excluding consumption taxes.

2. Including consumption taxes.

3. Yoshihisa Kawamura, a director of the Company, and his close relatives substantially own a majority of the voting rights.

Dainichi Can Co., Ltd. and Nissin Trading Co., Ltd. are fully owned by Nissei Real-Estate Co., Ltd.

4. Rent of buildings and others is determined based on an arms-length transaction in the neighboring area.

5. "Purchase of metallic containers and others" is determined based on an arms-length transaction.

6. "Sales of merchandise and finished goods, and offering of service" is determined on an arms-length transaction. 7. "Purchase of raw materials and others" is determined based on an arms-length transaction.

. Turchase of haw materials and others is determined based of an amis-length transaction.

									Millio	ns of yen
			Capital					Amount		2015 Palanco
Sort of related party	Name	Location	or invest- ment	Principal business	Ownership of voting rights	Relation with related parties	Contents of transaction	of trans- action (Note 1)	Account	at year- end (Note 2)
Companies where directors	Nissei Real-Estate Co., Ltd.	Chiyoda- ku, Tokyo	10	Rental of properties and others	Owned Indirect 13.42%	Rental of buildings and others	Payment of rent for buildings and others (Note 4)	18	Security deposit	8
and their close relatives owned a majority of the voting rights (Note 3)	Dainichi Can Co., Ltd.	ainichi Can Chiyoda- o., Ltd. ku, Tokyo	- 10 o	Manufacture and sale of metallic containers	Owned Indirect 4.50%	Purchase of metallic containers and others	Purchase of metallic containers and others (Note 5)	663	Trade notes and accounts payable, and other accounts payable	131
							Sales of merchandise and finished goods, and offering of service (Note 6)	67	Trade notes and accounts receivable	22
	Nissin Trading Co., Ltd.	Chiyoda- ku, Tokyo	20	Sale, import and export of petrochemical- related products	Owned Indirect 3.31%	Purchase of raw materials and others	Purchase of raw materials and others (Note 7)	960	Trade accounts payable and other accounts payable	161
							Sales of merchandise and finished goods, and offering of service (Note 6)	373	Trade accounts receivable	129

Notes: 1. Excluding consumption taxes.

2. Including consumption taxes.

3. Yoshihisa Kawamura, a director of the Company, and his close relatives substantially own a majority of the voting rights.

Dainichi Can Co., Ltd. and Nissin Trading Co., Ltd. are fully owned by Nissei Real-Estate Co., Ltd.

4. Rent of buildings and others is determined based on an arms-length transaction in the neighboring area.

Kent of buildings and others is determined based on an arms-length transaction in the registroning area.
"Purchase of metallic containers and others" is determined based on an arms-length transaction.
"Sales of merchandise and finished goods, and offering of service" is determined on an arms-length transaction.
"Purchase of raw materials and others" is determined based on an arms-length transaction.

# 1. Basic framework for internal control over financial reporting

Yoshiyuki Nakanishi, Representative Director, President and CEO, and Masayuki Saito, Representative Director, Executive Vice President and CFO of DIC Corporation (the "Company"), are responsible for designing and operating internal control over the Company's financial reporting and have designed and operated internal control over financial reporting in accordance with the basic framework for internal control set forth in "On the Revision of the Standards and Practice Standards for Management Assessment and Audit concerning Internal Control Over Financial Reporting (Council Opinions)," issued by the Business Accounting Council of the Financial Services Agency of Japan.

Internal control aims to achieve its objectives to a reasonable extent with the organized and integrated function of basic individual elements of internal control as a whole. Accordingly, due to the inherent limitations, there is a possibility that misstatements may not be completely prevented or detected by internal controls over financial reporting.

# 2. Scope of assessment, the basis date of assessment and assessment procedures

The assessment of internal control over financial reporting for fiscal year 2016 was conducted as of December 31, 2016, which is the end of this fiscal year. The assessment was performed in accordance with relevant assessment standards generally accepted in Japan for internal control over financial reporting.

In conducting this assessment, we began by evaluating internal control which may have a material impact on overall consolidated financial reporting ("company-level controls") and, based on the results of this assessment, business processes to be assessed were selected. We then analyzed these selected business processes to identify key controls therein that may have a material impact on the reliability of the Company's financial reporting, after which we examined the design and operation of these controls. These procedures thus allowed us to accurately evaluate the effectiveness of the Company's internal control.

We determined the required scope of assessment of internal control over financial reporting for the Company and its consolidated subsidiaries and equity-method affiliates from the perspective of materiality or the degree to which it may affect the reliability of financial reporting. Materiality of the impact which may affect the reliability of financial reporting is determined based on potential quantitative and qualitative impact on financial reporting. In light of the results of assessment of company-level controls, we reasonably determined the scope of assessment of process-level controls. Consolidated subsidiaries and equity-method affiliates which were concluded as immaterial taking into account the degree of quantitative and qualitative impact are not included in the scope for assessment of company-level controls.

With regard to the process-level controls, significant locations and business units to be tested were selected based on the changes in the scope of consolidation during the year, as well as on net sales for the previous year, with locations and business units the combined sales volume of which reached approximately two-thirds of consolidated net sales being defined as "significant." The scope of assessment at these locations and business units encompassed business processes relevant to net sales, accounts receivable-trade, accounts payable-trade, inventories and manufacturing facilities included in property, plant and equipment as significant accounts that may have a material impact on the business objectives of the Company. In addition, business processes relating to (i) greater likelihood of material misstatements, and/or (ii) significant accounts involving estimates and management's judgment, were also identified as business processes having greater materiality, taking into account their impact on financial reporting, and were included in the scope.

# 3. Results of the assessment

Based on the results of the assessment, we concluded that as of the end of the fiscal year ended December 31, 2016, the Company's internal control over financial reporting was effectively maintained.

Vala

Yoshiyuki Nakanishi Representative Director, President and CEO DIC Corporation
# Deloitte.

Deloitte Touche Tohmatsu LLC Shinagawa Intercity 2-15-3 Konan Minato-ku, Tokyo 108-6221 Japan

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#### INDEPENDENT AUDITOR'S REPORT

To the Board of Directors of DIC Corporation:

#### Report on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheet of DIC Corporation and its subsidiaries as of December 31, 2016, and the related consolidated statements of income, comprehensive income, changes in net assets, and cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

#### Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with accounting principles generally accepted in Japan, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

#### Auditor's Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in Japan. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

#### Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of DIC Corporation and its subsidiaries as of December 31, 2016, and the consolidated results of their operations and their cash flows for the year then ended in accordance with accounting principles generally accepted in Japan.

#### **Report on Internal Control**

We have audited management's report on internal control over financial reporting of the consolidated financial statements of DIC Corporation as of December 31, 2016.

#### Management's Responsibility for Report on Internal Control

Management is responsible for designing and operating effective internal control over financial reporting and for the preparation and fair presentation of its report on internal control in accordance with assessment standards for internal control over financial reporting generally accepted in Japan. There is a possibility that misstatements may not be completely prevented or detected by internal control over financial reporting.

#### Auditor's Responsibility

Our responsibility is to express an opinion on management's report on internal control based on our audit. We conducted our internal control audit in accordance with auditing standards for internal control over financial reporting generally accepted in Japan. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether management's report on internal control is free from material misstatement.

An internal control audit involves performing procedures to obtain audit evidence about the results of the assessment of internal control over financial reporting in management's report on internal control. The procedures selected depend on the auditor's judgment, including the significance of effects on reliability of financial reporting. An internal control audit includes examining representations on the scope, procedures and results of the assessment of internal control over financial reporting made by management, as well as evaluating the overall presentation of management's report on internal control.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

#### Opinion

In our opinion, management's report on internal control referred to above, which represents that the internal control over financial reporting of the consolidated financial statements of DIC Corporation as of December 31, 2016 is effectively maintained, presents fairly, in all material respects, the results of the assessment of internal control over financial reporting in accordance with assessment standards for internal control over financial reporting generally accepted in Japan.

Deloitte Touche Tohnatsu LLC

March 29, 2017



### Investor Information and Corporate Data

(As of December 31, 2016)

#### **Investor Information**

Common Stock

DIC common stock is listed and traded on the Tokyo Stock Exchange. There were 36,895 shareholders of record on December 31, 2016. On the Tokyo Stock Exchange, the high and low prices for each quarter of the years 2016 and 2015 were as follows:

	2016		2015	
	High	Low	High	Low
Jan.–Mar.	¥3,310	¥2,260	¥3,600	¥2,640
Apr.–Jun.	2,630	2,340	3,820	3,020
Jul.–Sept.	3,270	2,037	3,140	2,560
Oct.–Dec.	3,845	2,915	3,770	2,700

\*Stock price figures have been adjusted to account for the impact of a consolidation of shares of common stock by a factor of 10 to 1 with July 1, 2016, as the effective date.

Total Number of Shares Authorized	150,000,000 shares			
Number of Unit Shares	100 shares			
Paid-in Capital	¥96,556,692,787 (95,156,904 shares)			
Independent Public Accountants	Deloitte Touche Tohmatsu LLC			
Distribution of Shareholders	Japanese financial institutions 38.8%	Other Japanese corporations 17.1%	Foreign corporations 27.6%	Japanese individual investors and others 12.5%

Financial instruments business operators: **3.7%** Treasury stock: **0.4**%

		Number of Shares Owned (Thousands)	Percentage of Total		
Major Shareholders	Japan Trustee Services Bank, Ltd.				
	(Trust Account)	6,434	6.76%		
	Nissei Real-Estate Co., Ltd.	5,310	5.58		
	The Master Trust Bank of Japan, Ltd. (Trust Account)	4,526	4.75		
	Dainichi Can Co., Ltd.	4,256	4.47		
	The Dai-ichi Life Insurance Company, Limited	3.500	3.67		
	Nissin Trading Co., Ltd.	3.127	3.28		
	Japan Trustee Services Bank, Ltd. (Trust Account 4)	2,680	2.81		
	Aioi Nissay Dowa Insurance Co., Ltd.	2,590	2.72		
	Japan Trustee Services Bank, Ltd. (Trust Account 9)	2,269	2.38		
	Nippon Life Insurance Company	1,900	1.99		
		36,596	38.46%		
	Note: The Company implemented a consolidation of shares of common stock by a factor of 10 to 1 and changed the minimum unit of tradable shares from 1,000 shares to 100 shares with July 1, 2016, as the effective date.				
Transfer Agent	Mitsubishi UFJ Trust and Banking Corporation				
-	10-11. Higashisuna 7-chome. Koto-ku. Tokyo				
	137-8081, Japan				
Meeting of Shareholders	Our annual meeting of shareholders is held in March.				
For Further Information, Contact:	Corporate Communications Dept.				
	DIC Corporation				
	DIC Building, 7-20, Nihonbashi 3-chome, Chuo-ku,				
	Tokvo 103-8233. Japan				
	Tel.: (03) 6733-3033				
	E-mail: prir@ma.dic.co.jp				

#### **Corporate Data**

#### **Registered Address**

35-58, Sakashita 3-chome, Itabashi-ku, Tokyo 174-8520, Japan

#### Corporate Headquarters

DIC Building, 7-20, Nihonbashi 3-chome, Chuo-ku, Tokyo 103-8233, Japan Tel.: (03) 6733-3000 http://www.dic-global.com/

## Principal Domestic Offices, Plants and Laboratories (Nonconsolidated)

Number of Branch Offices:	2	
Number of Plants:	9	
Number of Laboratories:	1	

# Number of Employees 20,481

#### Date of Foundation

February 15, 1908

#### Date of Incorporation

March 15, 1937

### **DIC** Corporation

Corporate Communications Dept.

DIC Building, 7-20, Nihonbashi 3-chome, Chuo-ku, Tokyo 103-8233, Japan Tel: +81-3-6733-3034 Fax: +81-3-6733-3038 http://www.dic-global.com/en/

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